School Shop

vol. IX no. 5

JANUARY, 1950

Let's Evaluate Our Program
by S. Lewis Land

Small Parts Cabinet
by R. Paul Lightle

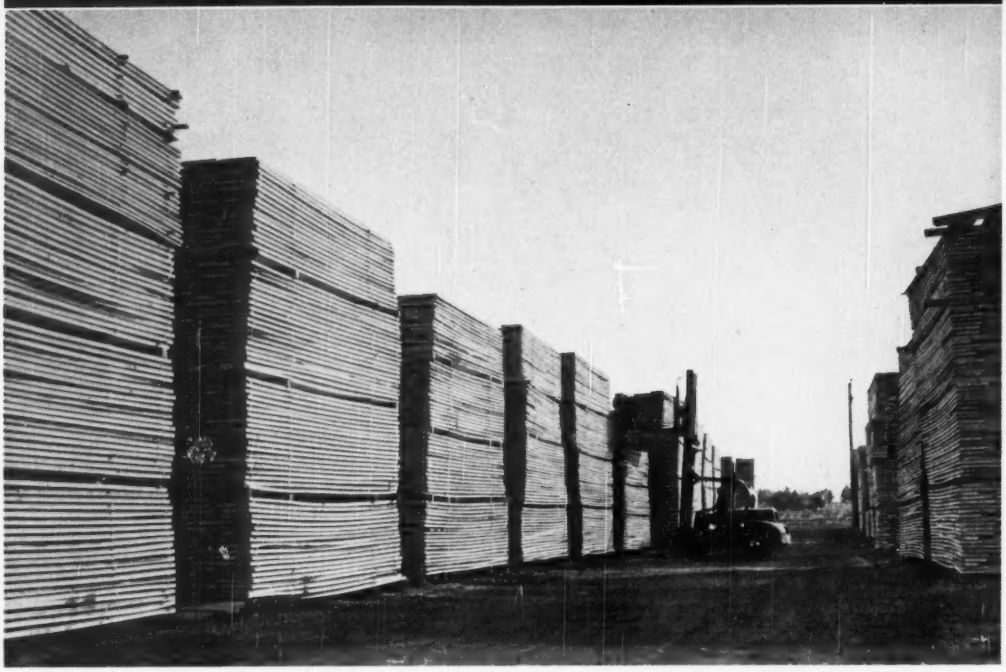
Plastic Candle Holder
by M. J. Willis

How to Teach
by Proctor and Griefzu

On the cover: Drafting students in die design at Fordson High School, Dearborn, Michigan, use the latest in equipment.

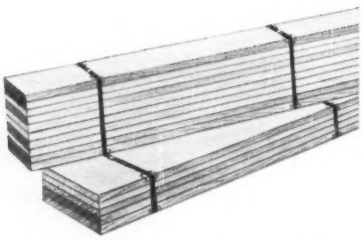
THE MAGAZINE FOR TEACHERS OF INDUSTRIAL EDUCATION

For Better Work...*Quicker...Easier*



Use B-G Soft-Textured LUMBER

"Easiest Working Lumber You've Ever Used"



There's nothing like it for helping students do better work . . . . show more enthusiasm for each project . . . . advance faster in their progress.

Quite understandable when you see how quickly and accurately it "works" . . . . how perfectly it sands, takes a finish and holds glue. These are the features that have made it the favorite lumber in schools in over 70% of the states. Don't delay giving students the advantages they get with B-G Lumber.

Save time, money and extra paper work by getting ALL your machines, equipment and supplies from B-G. Take advantage now of the new low prices in our 1949-50 Catalog.

BRODHEAD GARRETT CO.

4560 E. 71 ST. CLEVELAND 5, OHIO

"EVERYTHING IN INDUSTRIAL ART SUPPLIES"

In the Offing . . .

Look next month for a description of a new development in metal-working—metallizing. Machine-shop departments will be amazed at what can be done by spraying hot metal on worn bearings and other parts. There will be the usual features, of course, including straight-from-the-shoulder editorials, projects, and listings of the latest in the various types of instructional aids.

EDITORIAL ADVISORY BOARD

Kenneth W. Brown, Assistant Director, Division of Fine and Industrial Arts, Philadelphia, Pennsylvania, Public Schools.

Howard A. Campion, Assistant Superintendent in charge of Adult and Vocational Education Division, Los Angeles, California, Public Schools.

W. H. Cooper, Chief, Trade and Industrial Service, U. S. Office of Education, Washington, D. C.

S. L. Coover, Director, Industrial-Arts Department, State Teachers College, California, Pennsylvania.

Verne C. Fryklund, President, The Stout Institute, Menomonie, Wisconsin.

G. Wesley Ketcham, Consultant in Industrial Arts, State Department of Education, Hartford, Connecticut.

John R. Ludington, Specialist in Industrial Arts, U. S. Office of Education, Washington, D. C.

Arthur B. Mays, Professor of Industrial Education, University of Illinois, Urbana.

V. L. Pickens, Director of Practical Arts, Public Schools, Kansas City, Missouri.

Ernest J. Simon, Director of Vocational Education, State of Illinois, Springfield.

Ralph C. Wenrich, Associate Superintendent of Public Instruction in Charge of Vocational Education for Michigan, Lansing.

E. L. Williams, Director, Industrial Extension Service, A. and M. College of Texas, College Station.

Editor and Publisher
Lawrence W. Prakken

Assistant Editor
William P. Byrne

Consulting Editors
Marshall L. Byrn and
Thomas Diamond

Advertising Manager
T. Todd Jones

Circulation Manager
Ruth L. Striffler

MEMBER OF
EDUCATIONAL PRESS ASSOCIATION OF AMERICA

School Shop

FOR INDUSTRIAL EDUCATION TEACHERS

CONTENTS

Vol. IX, No. 5 JANUARY, 1950

School Shop Talk—Editorial Comment 2
"Industry Trained or College Trained?" Thomas Diamond.

Let's Evaluate Our Program! S. Lewis Land 5
As vocational education comes of age the need for criterions for judging the effectiveness of programs arises. Here are some suggestions from a leader in the field.

Mississippi Valley Industrial Arts Conference Convenes in Chicago 6

Small Parts Cabinet. R. Paul Lightle 7
An excellent device for aiding the development of woodworking skills.

Plastic Candle Holder with Poinsettia Motif. Marvin J. Willis 8
Good practice with plastic materials at low cost with this project made from scrap pieces.

How to Teach. James O. Proctor and G. Edward Grietzu 9
Check your instructional performance against these seven points.

AVA Holds Successful Convention at Atlantic City 9

In the Morning Mail 10
Interest continues high in the matter of the place of industrial arts in the AVA as raised by Tom Diamond's editorial in School Shop.

School Shop Kinks 12
Short cuts for making teaching easier and more effective.

Chase the Chips. Reuben H. Childers 13
This machine-shop project will serve your students well in keeping threads clean.

Hitting the Highway Helps Students of Graphic Arts. D. P. Barnard 16
How plant and school visitation give student teachers more insight into school and trade practices.

News 18
Happenings in education of interest to shop teachers.

Strictly Personal 18
About your fellow teachers.

Teaching Tools. John F. Nowak 19
Tool Crib: Whose Baby?

Elementary Printing Test. Paul C. Knoop 21
An examination which is designed to cover the work in a one-semester course in graphic arts at the junior-high-school level.

Instructional Resources: Books, Pamphlets, Visual Aids 22
Listings of the latest in books, films, and other materials which will help you in your shop teaching. Designed so that you can keep up-to-date on instructional materials.

News from Industry 24
News items about new products and teaching aids designed by industry to be of service to shop teachers. Send in a coupon for free material.

Citation to Diamond 26

From Washington. Michael Paca 28
News from the Nation's Capital of interest to shop teachers.

Index to Advertisers 28

School Shop is published monthly, September through June, at Ann Arbor, Michigan. Manuscripts are paid for at regular space rates and should be addressed to the Editor, School Shop, 330 South State Street, Ann Arbor, Michigan. Subscription rates, $2.00 a year; Canadian, $2.00 a year; foreign, $3.00 a year. 50 cents a copy for the April issue. Others 25 cents a copy. Printed in the U.S.A.

Copyright, 1950, by Lawrence W. Prakken.

Advertising Representatives: Mid-West—Macintyre-Simpson & Woods, 75 East Wacker Drive, Chicago 1, Central 6-1715. Eastern—Macintyre-Simpson & Woods, 101 Park Avenue, New York 17, Lexington 2-8998.

applied

drawing and

sketching

by

Joseph W. Fleming

Director of Industrial Arts and Vocational Education, Pittsburgh, Pa.

Dewey F. Barich

Professor and Head of Industrial Arts Department, Kent State University.

L. C. Smith

Assistant Managing Editor, American Technical Society.

for everyone

Today it is almost as important to draw and sketch as it is to **read.** The ability to visualize and interpret drawings is a necessity for everyone.

exploratory

This new course tests the student's aptitude for drafting while developing a vitally important skill.

preparatory

No time is wasted. Progress in future drafting courses will be greatly accelerated. Sketching is more easily taught **now** than later.

no instruments

This work-textbook requires no drafting instruments. Holds student's interest through practical applications to everyday life. Truly a **Life-Adjustment** course.

List price $2.00

Please rush me an examination copy of APPLIED DRAWING AND SKETCHING

Name.....

School.....

Address.....

City..... State.....

Dept. W379

AMERICAN TECHNICAL SOCIETY

Publishers Since 1898

DREXEL AVENUE AT 58th STREET
CHICAGO 37, ILLINOIS

School Shop TALK

COMMENTS ON ISSUES FACING INDUSTRIAL EDUCATION

Industry Trained or College Trained?

By Professor Thomas Diamond, University of Michigan

PERIODICALLY, there comes to the surface the perennial debate on whether the shop-trained teacher or the teacher trained in college is the better. We, who have the questionable advantage of being older, settled this matter more than 30 years ago. Notwithstanding the profound thought directed toward the question at that time and in spite of the fact that those who thought they had settled the matter considered that they had given it appropriate interment, each generation seems to take ghoulish delight in exposing the corpse to the vulgar stare of the educational world.

The writer does not object to youth rediscovering America. This is good. They are awakening to the realization that their country is alive and that it plays an important role in the affairs of man. But who can take any pleasure in discovering a corpse, especially when the subject has been exposed to the forces of nature for a long period of time?

Since the cadaver has once more been exposed by some adventurous youth, it may not be out of place to reiterate some of the ideas concerning it which have been presented by various individuals throughout the years.

In the first place, it can be stated emphatically that the mere fact that a person has served an apprenticeship in a trade, or that he has graduated *cum laude* from some institution of higher learning, does not necessarily mean that he is a good teacher. The individual who is master of a trade may, or may not, be at the same time a good teacher. Similarly, the college graduate may, or may not, be successful in the teaching profession.

The craftsman presumably is a master of his craft, which is the subject matter he would be expected to teach. On the other hand, many of our college graduates have only a superficial grasp of the skills and knowledge they hope to teach in our school shops.

Then too, the craftsman lacks experience in analyzing his subject for teaching purposes; he has had no occasion to consider the proper instructional order of the units in his trade; he fails to appreciate the need for considering individual differences in teaching; and he is totally ignorant of the generally accepted methods of teaching. In contrast to this, the college man, who has prepared himself for teaching, has had opportunities to study and experiment with these areas which are so important in the provision of adequate instruction.

Thus we see that both the tradesman and the college man possess skills or knowledge which are important in teaching. Each could be improved if he had something possessed by the other. Because of this, it is suggested that the tradesman who has ambitions to become a teacher seek opportunities to increase his skill in the art of teaching. At the same time, the college man would tend to become a better teacher if he sought to supplement his college training by obtaining additional work experience in the environment in which the tradesman received his training.

After all, it is not a matter of which of the individuals being considered is the better. Both of them may be good, but the extent of their goodness does not depend entirely on where they received their original training. Their value as teachers depends largely on knowledge and skill on one hand and skill in teaching on the other hand. The extent to which they possess both determines their success as teachers, regardless of whether their training originated in a shop or a college.

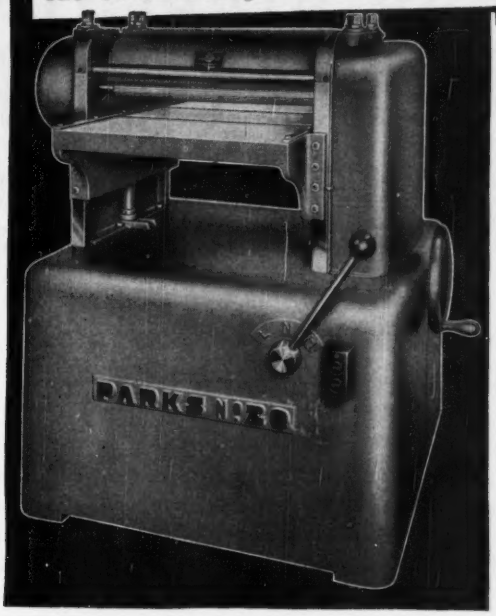
In conclusion, it should be said that there should be no conflict between the two types of individuals. Each can help the other. In view of this, let us—shop men and college men—work together for the common good to the end that all may benefit.

R. I. P.

Happy New Year!

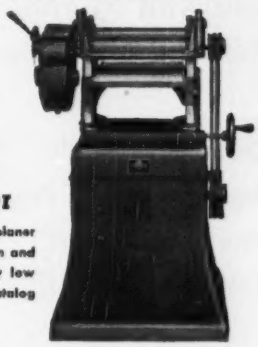
The best wishes of SCHOOL SHOP go forth to its readers at the mid-century mark. The first half of the twentieth century has seen great progress in education. May the second half, with your help, achieve even greater goals.

The Sensationally NEW Low-Priced



PARKS No. 20
20" PLANER

Here is a modernly designed, rugged, high-speed, low-priced planer that is ideally suited for every shop and industrial plant requiring a quality surfacer. The Parks No. 20 Planer has a four-knife cutterhead with a speed of 3600 R.P.M. and offers two feed speeds — 20 and 40 F.P.M., and 40 and 80 F.P.M. Write for complete descriptive literature.

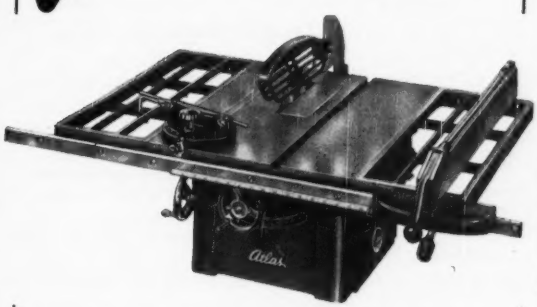


The PARKS Heavy-Duty 12" x 4" Planer

A compact, sturdy, thickness planer that offers mill planer precision and ruggedness at a sensationally low price. Write for descriptive catalog sheet.

The PARKS WOODWORKING MACHINE CO., Dept. 24-KK, 1546 Knowlton St., Cincinnati 23, O.

Atlas 8" TILT/ARBOR SAW



Industrial capacity, accuracy, and ruggedness at a school shop price! Increases student interest, simplifies instruction, because it makes good workmanship easier.

Precision-ground grey iron table. Arbor tilts 45° for angle sawing, while table stays flat—work can't slide into blade. Cuts to 2⅜" deep. Rigid-locking, instant-adjusting rip fence with vernier control. Precision ball bearings. Three table sizes: 22" x 18", 22" x 26¾", and 22" x 35½". Send a postcard for catalog with full details.

ATLAS PRESS CO.

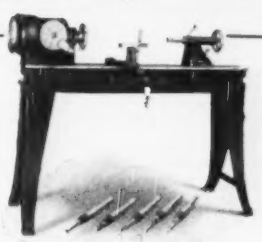
KALAMAZOO, MICH.
136 N. PITCHER ST.

Atlas Power King

MATCHED PRECISION TOOLS FOR WOODWORKING AND METALWORKING

"OLIVER" Metal Spinning Lathe

A most useful machine for progressive shops



Students learn quickly to spin practical articles of surprising beauty from aluminum, bronze, copper, etc. The "Oliver" Metal Spinning Lathe has heavy bed, extra large bearings and live tail center. The ball bearing motor-driven headstock is adjustable from 800 to 2750 r.p.m. Swings 12" diameter, 24" between centers. And for turning wood, this "Oliver" Lathe is unmatched. *Write for Bulletin No. 159-M.*

"Oliver" Woodworking Equipment for School Shops

Band Saws	Jig Saw	Speed Lathes
Boring Machines	Mortisers	Pattern Lathes
Circular Saws	Planers	Wood Trimmers
Tool Grinders	Sanders	Electric Glue Pot
Jointers	Shapers	

OLIVER MACHINERY COMPANY, GRAND RAPIDS 2, MICH.

INSTRUCTORS AND STUDENTS ENTHUSIASTIC OVER NEW PROJECT

Best Efforts Are Sparked by Enlisting Related Interests

Desire to Build Best Possible for Favorite Sport Creates Incentive

New Hartford, N.Y., Jan. 1 (NTI)*—Scores of letters from Industrial Arts Instructors attest to the fact that the building of something genuinely desired for use by the student is an invaluable incentive to careful workmanship and concentration.

"My students are very proud of the rods they have built" is a commonly expressed reaction among instructors of apprentices of all ages. Boys are frequently quoted to have boasted. "My bamboo rod is better than Dad's." Or, from another, "To a remarkable degree it promotes enthusiasm and respect for good workmanship."

Variety Rod Types Offered

Standard rod-building kits offered by the Empire Tackle Company include fresh water fly, bait and pin casting rods and salt water weakfish, surf and trolling rods. Special kits can usually be made up for tackle peculiar to certain areas.

BAMBOO ROD BUILDING LAUDED AS AID TO INDUSTRIAL ARTS TRAINING

Instructors Cheer the Fully Illustrated Step-by-Step Self-Instructing Directions

New Hartford, N.Y., Jan. 1 (NTI)*—The recently announced split-bamboo rod building kits adaptable for junior high through adult training classes are meeting with an enthusiastic nationwide acceptance. Graphically prepared, step-by-step instructions and highest quality materials combined with widespread participation in angling are said to account for the speedy growth.

Includes Advanced Supplementary Instructions

Each kit includes completely illustrated instructions for that particular type of rod. In addition, and for the instructor who is inclined to carry the project to its ultimate, advanced rod building information is covered in what is perhaps the most complete monograph on the subject. Among other subjects covered are the theories of parabolic action, guide spacing and tapers, rod straightening, special finishing, grip forming, history of fishing and of bamboo rod building.

Only Simple Hand Operations Required

Although instructions are provided for use of a lathe, nothing more than a file, scraper and sandpaper are necessary to build a first quality rod from the Empire Tackle Company kits. The student operations include scraping, sanding, fitting, measuring, aligning, guide locating and winding, varnishing and assembling.

Completely Illustrated Instructions

Generally prevailing overcrowded classes, resulting in limited time for individual guidance, makes graphically presented directions a boon to instructors. Step-by-step, from an introduction to nomenclature through varnishing the completed rod, is illustrated by close-up drawings. So simply and completely are the steps detailed that any 12-year old with reasonable aptitude can make a rod of commercial quality without any additional help.

Priced Especially for Schools

Empire Tackle Company offer their rod building kits at a school price of one-half the regular retail price and a fraction of what equal quality component parts would cost if purchased seperately. The split-bamboo sections and every piece of hardware are of the finest quality obtainable and only careful workmanship is required to build a rod which would retail from five to ten times the cost of the kit.

MAIL COUPON FOR COMPLETE INFORMATION

EMPIRE TACKLE CO., INC.
2 Genesee St., New Hartford, N.Y.

Please send me complete information, price list and sample instructions.

Name.....

Address.....

City..... Zone..... State.....

* News to Instructors.

Let's Evaluate Our Program!

By S. Lewis Land

Vocational education has lately been looking at itself with an increasingly critical eye. Here are some ideas on evaluative criterions. Reported from an address by Professor Land before the New Jersey Vocational and Arts Association, Atlantic City, November 12. S. Lewis Land is Director, Vocational Teacher Education, The Pennsylvania State College.

OVER the period of 32 years since the enactment of the Smith-Hughes Law in 1917, the interest of all those engaged in the field of vocational-industrial education has been largely centered on problems of organization, development, and expansion of the program to meet the increasing demand for training opportunities. Many of the problems involved in initial organization and development of the program have been solved. Our attention in recent years has been directed toward the refinement and improvement of the program.

In considering the subject before us, that is the evaluation of vocational-education programs, let us begin with the conclusions presented by the committee on evaluative criterions last year. This committee reached six significant conclusions[1]:

1. It is imperative that a set of evaluative criterions suitable for examining the complete vocational program be developed.
2. Any evaluative criterions should recognize that a vocational school system is individual in its total community services.
3. The committee feels that no existing criterions are entirely satisfactory for evaluating vocational education.
4. The committee recognizes and has agreed that the task is too great and too important to be accomplished without advisory services.
5. The committee recommends that the problem be referred to a graduate school for discussion to determine whether a graduate student or students might undertake the necessary research to develop such criterions. Such a procedure should provide for an advisory committee of representative vocational people who might be called on as consultants by the graduate students.
6. Ultimately, after tentative evaluative procedures have been developed, the committee recommends that the data should be presented to the American Vocational Association for consideration as a national project.

The Cooperative Study

Reference is made by the committee to the inadequacy of the "data available in evaluating education on the secondary level." This reference is doubtless directed at the evaluative criterions developed by the Cooperative Study of Secondary School Standards[2] which has been used generally in the evaluation of academic high schools and in some instances in the evaluation of local programs of vocational education.

It is generally recognized that although these standards are quite adequate for the purpose for which they were developed, they are inadequate for use in evaluations of special programs of vocational education. Many proposals have been made regarding the possible revision and expansion of these criterions to adapt them for use in our field.

The American Vocational Association recently invited suggestions from its membership as to the position which the Association should take in connection with the possible development of evaluative criterions for our field. In a recent issue of the *American Vocational Journal*, organ of the AVA, it was indicated that inasmuch as the AVA had been suggested by many persons as not only the body to prepare the standards for evaluation but also as the accrediting agency for vocational education, the national office of the Association would welcome expressions of opinion from interested parties.[3]

Regardless of the extent to which we may or may not be able to use the criterions or technics developed by the Cooperative Study, we in vocational education should be familiar with both the criterions which the Study used and the technics of evaluation as outlined in the handbook[4] which was prepared to accompany the evaluative criterions.

Criterions for All

The committee in its Medford Lakes report recommended the development of evaluative criterions for all phases of our program of vocational education including trade and industrial education, home economics, distributive education, and agriculture.

Our Agricultural Education Service has perhaps made greater progress in the development of adequate criterions than any of the four major services, having begun studying the problem of more adequate criterions for evaluating programs of vocational education in agriculture in 1938. This has just now culminated in the publication of a bulletin containing evaluative criterions made up of 20 evaluative schedules prepared by the National Standards Committee for Vocational Education in Agriculture, *The Evaluation of Local Programs of Vocational Education in Agriculture*.[5]

The plan provides for a five-point rating schedule: very superior, superior, average, inferior, very inferior. These may serve to point the direction to those of us in trade and industrial education.

Evaluative criterions for vocational industrial schools and classes were developed by a seminar group at The Pennsylvania State College in 1946.[6] The group was made up largely of local directors of vocational education.

The plan, like the evaluative criterions for local programs of vocational education in agriculture, provided for a five-point rating schedule with specific criterions in eight major functional areas: (1) school plant, (2) administration, (3) curriculum, (4) shop instructional program, (5) class instructional program, (6) teacher rating, (7) guidance program, and (8) pupil-activities program.

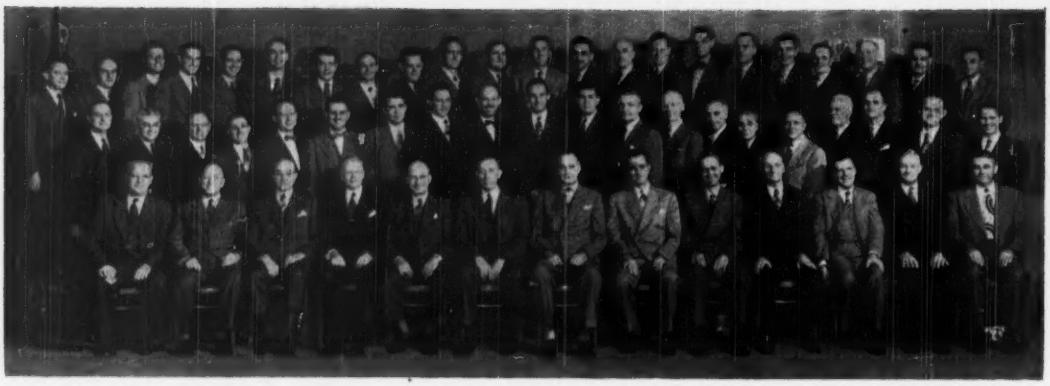
In March, 1949, the U. S. Office of Education appointed a committee from the North-Atlantic States region to study evaluative procedures in trade and industrial education. The committee presented as a part of its report an outline for evaluative criterions for vocational-industrial schools and classes[7]. The outline presented here contains nine major divisions with suggested subdivisions:

Outline for Evaluative Criterions for Vocational-Industrial Schools and Classes

I. School Plant
- A. Site
- B. Building
- C. Administrative offices
- D. Classrooms, drafting rooms, and related-subjects laboratories
- E. Library
- F. Projection rooms
- G. Shops
- H. Auditorium
- I. Athletic and recreational facilities

(Continued on page 6)

[1] *Committee Report on Evaluation Criteria*. Medford Lakes, N.J., October 13-16, 1948.
[2] *Evaluative Criteria*. Cooperative Study of Secondary School Standards. Washington, D.C.: 1939.
[3] "Shall AVA Prepare Vocational Standards?", *The American Vocational Journal*, XXIV (April, 1949), 24.
[4] *How to Evaluate a Secondary School*, Cooperative Study of Secondary-School Standards, Washington, D.C.: 1940.
[5] *The Evaluation of Local Programs of Vocational Education in Agriculture* (Vocational Division Bulletin No. 240, Agricultural Series No. 58, U. S. Office of Education, 1949).
[6] S. Lewis Land, *et al.*, "Evaluative Criteria for Vocational Industrial Schools and Classes," *Industrial Arts and Vocational Education Magazine*, XXXVI (March, 1948), 122-26.
[7] *Report of Committee on Evaluation Procedures in Trade and Industrial Education*, North Atlantic States Regional Conference, New York, New York, April 26, 1949.



FRONT ROW, left to right: **L. T. Smith**, Bowling Green, Ky., S.T.C.; **J. J. Metz**, Ed., Ind. Arts & Voc. Ed.; **W. T. Bawden**, S.T.C., Pittsburg, Kans.; **A. B. Mays**, Univ. Ill.; **C. A. Bowman**, Stout Inst.; **C. J. Crowley**, Bowling Green, Ohio, S.U.; **Pres. V. C. Fryklund**, Stout Inst., **Conf. Chairman**; **V. Randel**, Sam Houston S.C.; **J. F. Friese**, Penn. State Col.; **H. J. Smith**, Univ. Minn.; **James McKinney**, Pres., American Schls.; **M. T. Oakland**, N. Ill. S.T.C.; **L. L. Gore**, Geo. Peabody Col.

MIDDLE ROW: **D. Hunt**, Okla. A&M; **C. R. Kinison**, Ohio Univ.; **W. D. Stoner**, Miami Univ.; **S. M. Dell**, McPherson Col.; **C. K. Beach**, Cornell Univ.; **C. H. Groneman**, Texas A&M; **J. Feirer**, West. Mich. Col.; **J. A. Fuzak**, Mich. State Col.; **H. H. London**, Univ. Mo.; **D. F. Hackett**, Ga. T.C.; **H. L. Oakley**, Murray, Ky., S.T.C.; **W. Wetzel**, Western Ill. State Col.; **R. M. Torgerson**, Bowling Green, Ohio, S.U.; **W. A. Klehm**, East. Ill. S.C.; **F. Strickler**, Bradley Univ.; **P. S. Waldeck**, Sup. Ind. Arts, Ohio; **F. R. Kepler**, Detroit, Mich.; **W. T. Sargent**, North. Mich. Col.; **A. G. Williams**, Southeast Mo. S.C.; **K. L. Bing**, Greenville, N.C., S.C.

BACK ROW: **M. K. Humble**, Univ. Ill.; **H. A. Pederson**, Platteville, Wis., S.T.C.; **H. F. Nelson**, Univ. Minn.; **T. R. Gaines**, Central S.T.C., Mo.; **W. P. Hughes**, Nat. Safety Coun.; **L. W. Prakken**, Ed., School Shop; **R. Wenrich**, State Dir. V.E., Mich.; **N. A. Hauer**, La. State Univ.; **R. H. Larson**, St. Cloud, Minn., S.T.C.; **R. A. Hardin**, Univ. Okla.; **A. Smith**, Central State Col, Okla.; **C. A. Elliott**, East. Ill. S.C.; **D. F. Barich**, Kent State Univ.; **D. Fox**, West. Mich. Col.; **J. F. Plummer, Jr.**, South. Ill. Univ.; **W. C. Bicknell**, South. Ill. Univ.; **F. J. Schmidt, Jr.**, Ball S.T.C.; **O. C. Bumb**, Ball S.T.C.; **E. W. Manzer**, Platteville, Wis. S.T.C.; **S. A. Jager**, Ind. S.T.C.; **R. Stombaugh**, Ill. State Nor. Univ.; **A. R. Pawelek**, Ball S.T.C. Not present for picture: L. V. Newkirk, G. H. Silvius, A. Swope.

Mississippi Valley Industrial Arts Conference Convenes in Chicago

THE 36th Annual Mississippi Valley Industrial Arts Conference was held in Chicago on November 10-12 with the largest attendance in the history of the organization. Topics discussed at the unique round-table sessions, presided over by Dr. Verne C. Fryklund, President of the Stout Institute, included student teaching, terminal education and industrial arts, the graduate program for the master's degree, air-age education, and the problem-solving method in industrial-arts teaching as well as others.

Elected to membership in the conference were Amos G. Williams of the Southeast Missouri State College and P. S. Waldeck, State Supervisor of Industrial Arts for Ohio.

Evaluation . . . *from page 5*

II. Administration
- A. Qualifications of administrator
- B. Administrative duties
- C. Public relationships

III. Supervision
- A. Qualifications of supervisor
- B. Supervisory duties

IV. Curriculum
- A. Course offerings
- B. Course content
- C. Related courses
- D. Length of time shops and classes meet
- E. Library

V. Shop Instructional Program
- A. Instructional plans and activities
- B. Instructional materials
- C. Instructional methods
- D. Pupil-teacher relationships
- E. Shop management
- F. Instructional evaluation

VI. Related and Academic Instructional Program
- A. Instructional plans and activities
- B. Instructional materials
- C. Instructional method and management
- D. Pupil-teacher relations
- E. Instructional evaluation

VII. Teacher Rating
- A. Personality
- B. Teacher preparation
- C. Teacher-instructional plans
- D. Professional attitude
- E. Instructional management
- F. Skill and knowledge of methods and teaching technics
- G. Teacher relationships

VIII. Guidance Activities
- A. Organization and staff
- B. Selection of pupils
- C. Duties of guidance staff
- D. Records and pupil information
- E. Advisory procedures
- F. Placement and follow-up program

IX. Pupil Activity Program
- A. Student government
- B. Athletics
- C. Clubs
- D. Musical organizations
- E. Dramatics
- F. School publications
- G. Social activities

Up to now, an effort has been made to indicate progress which has been made in the solution of some problems involved in the development of standards and in the development of more effective procedures for use in evaluation.

Some Common Denominators

The factor which hinders us most in making progress is the difficulty of arriving at criterions which can be used in all of the states in all the local programs in a given state, or even in all schools in a given school district.

There are, however, certain standards which are common to all schools. All vocational schools must conform to the mininum standards established in the Smith-Hughes and George-Barden Acts in order to qualify for funds under those Acts. All schools must likewise conform to the minimum standards included in *Bulletin No. 1* of the U. S. Office of Education.[8] All schools in a given state must conform to the state plan for vocational education.

Here, then, are some very specific standards which are possible of establishment on a nation-wide basis and other standards which are possible of establishment on a state-wide basis.

The problem of adequately evaluating programs of vocational education is one of the most important before us today. Only through the development of adequate evaluative criterions and the formulation of sound evaluative procedures can we contribute most to the establishment of the most effective program of training which will equip our young people for "social, civic, and vocational competency."

[8] *Administration of Vocational Education* (Vocational Education Bulletin No. 1, General Series No. 1. Revised 1949), U. S. Office of Education.

Small Parts Cabinet

Note the trim appearance of this well-made cabinet which is useful for holding small parts.

By R. Paul Lightle

Woodworking skills can be developed through construction of this cabinet which makes a useful addition to the equipment of the school shop or the home workshop. R. Paul Lightle teaches at the James H. Smart School, Fort Wayne, Ind.

JUNIOR-HIGH students will get a chance to exercise basic woodworking skills as well as learn some of the technics of cabinet making in this project for storage of small parts. Whether it is for use in the school or in home workshops, this cabinet will aid students to learn good "shopkeeping" habits.

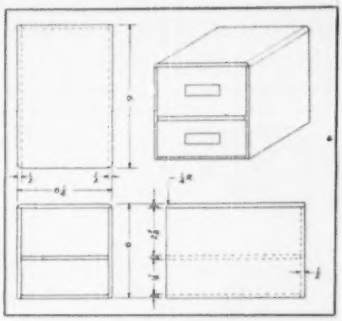
The cabinet was designed for storage of such items as washers, rivets, stove bolts, brads, etc. Many such items of stock are used in the shop and it will represent a real time saving to have them at hand.

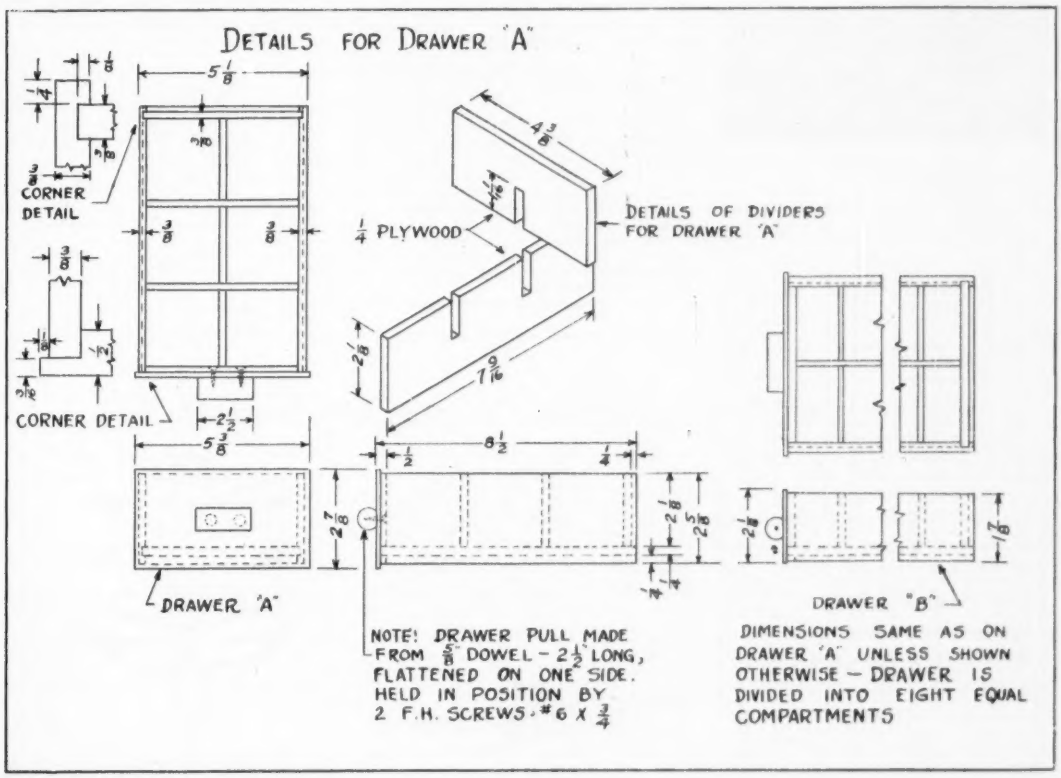
The dimensions have been found satisfactory for our uses. However, with minor changes additional storage space can be created to fit your specific requirements.

The project was designed and built for school-shop use, but it should make a good junior-high or senior-high woodworking project. It would also make a welcome addition to the home workshop.

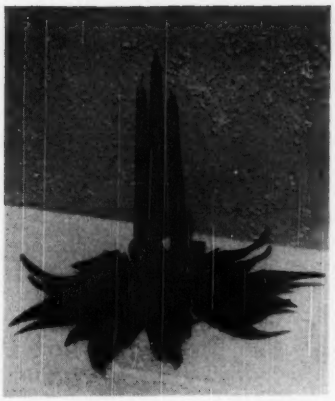
The larger drawer has six sections and the smaller is divided into eight. Sections are of ¼" plywood and are made so as to slip together by using lap-edge joints. If the sections are fitted tightly, they need not be fastened permanently. Drawer pulls are from ⅝" dowel rod, flattened on one side and held in place with flat-head screws.

Our cabinet was finished with three coats of white shellac, each coat being rubbed down with 6/0 sandpaper, then waxed.




DETAILS FOR DRAWER "A"
CORNER DETAIL
CORNER DETAIL
¼ PLYWOOD
DETAILS OF DIVIDERS FOR DRAWER "A"
DRAWER "A"
DRAWER "B"
NOTE: DRAWER PULL MADE FROM ⅝" DOWEL - 2½" LONG, FLATTENED ON ONE SIDE. HELD IN POSITION BY 2 F.H. SCREWS - #6 X ¾
DIMENSIONS SAME AS ON DRAWER "A" UNLESS SHOWN OTHERWISE - DRAWER IS DIVIDED INTO EIGHT EQUAL COMPARTMENTS

Plastic Candle Holder with Poinsettia Motif



Red plastic is used for the larger top leaves and green plastic for the smaller bottom leaves.

By Marvin J. Willis

This unusual prize-winning project can be constructed with scrap pieces. The motif can be easily changed to fit the locality. Marvin J. Willis teaches at the Ada Merritt Junior High School, Miami, Florida.

THE Florida poinsettia furnishes the design for this attractive centerpiece.

The project affords much pleasure and instruction for both the fine-arts and industrial-arts student. The entire project can be constructed from scrap plastic.

The petals of red acrylic plastic and leaves of green plastic are cut, polished, and shaped as shown in the diagrams. To obtain best results, the number system of arrangement should be followed throughout. The shaping of the leaves and petals gives the student much manipulative training as well as an esthetic appreciation. This is done by simply heating the plastic, shaping with the fingers, and setting by dropping in cool water.

The concavo-convex base and center plate are produced from heated plastic. A plus-and-minus form is used to shape the discs.

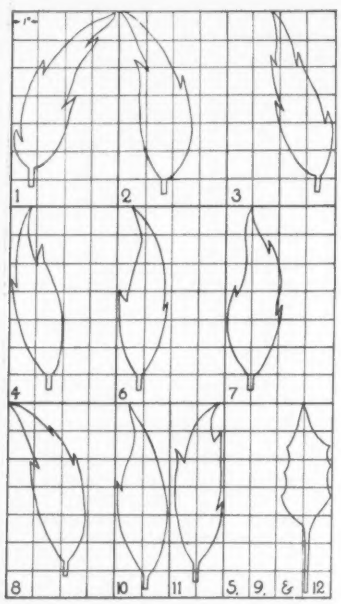
The assembly disc is cut from 3/4" clear plastic. Holes for the candle-holder coils are drilled with a 1/4" drill, while those for the petals and leaves are drilled with a 3/16" drill.

The candle-holder coils are made of 1/4" clear plastic dowel. The dowel is heated and shaped by winding around a wood dowel the size of the candle to be used. This is approximately 7/8".

In assembling, it is recommended that the leaves and petals be cemented to the assembly disc first. The base is then cemented to the disc. The center of the disc should be cupped out to conform to the top of the convex base. This makes it possible to produce a better joint. Next the center drip plate is cemented on the top of the disc, and finally the coils are arranged and cemented.

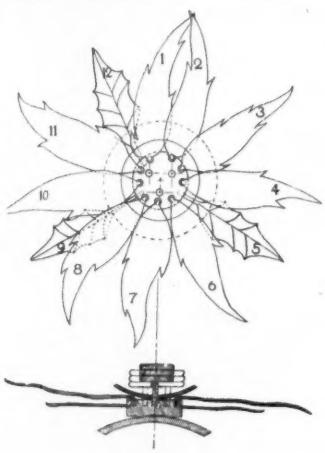
The author finds that a syringe and needle help to do a good cementing job.

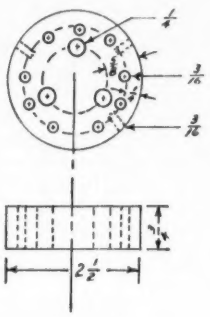
Forming candle-holder coils with dowel rod. Note forms for making the base and center drip plate.



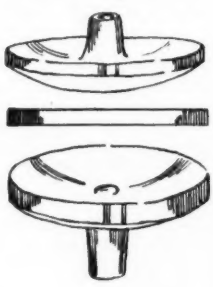
BILL OF MATERIALS

Material	Size:	Quantity:
Translucent red plastic for petals.	1/8" x 4" x 7"	8
Translucent green plastic for leaves.	1/8" x 2" x 6"	3
Transparent clear plastic for base.	1/4" x 5" D.	1
Translucent green plastic for center drip plate.	1/8" x 3 1/2" D.	1
Transparent clear plastic for assembly disc.	3/4" x 2 1/2" D.	1
Transparent clear plastic dowel for candle-holder coils.	1/4" x 12"	
Methylene dichloride (cement)		
Yellow candles (tapered)		3



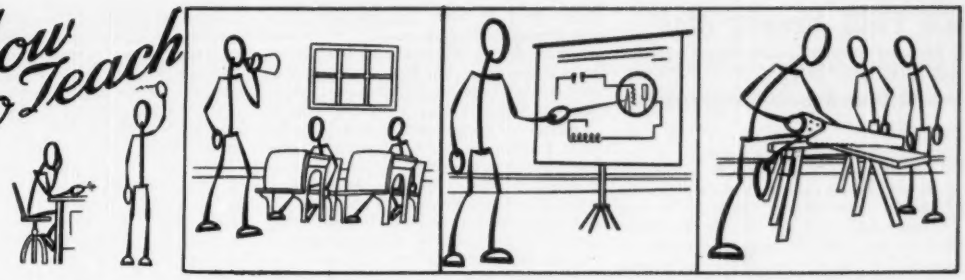


Assembly Disc



Plus and Minus Forms

How to Teach



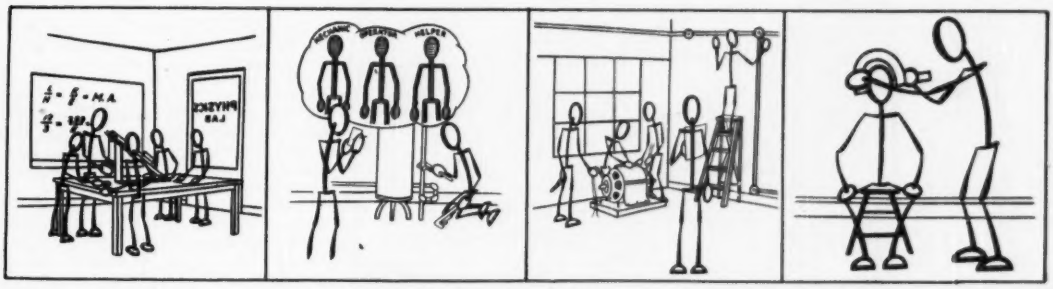
By James O. Proctor
and G. Edward Griefzu

Department of Vocational Education,
Baltimore, Maryland

TELLING: Tell the students how to do, what to do, and why to do. Use terminology which the trainee understands. Tell him slowly. Emphasize main points for each topic. Through questioning and testing, check during each lesson on the effectiveness of your instruction. Do you accomplish the objectives listed in your daily teaching plan?

SHOWING: Show the student the simplest, easiest, shortest, and most efficient method. He remembers what he sees better than what he hears. Let him see each step. Show him the danger points in his assignment. To emphasize, show in different ways and encourage the students to ask questions at each step.

DOING: Put the student on his own. Let him do what you have been telling and showing him. Remember, the student learns how to do most effectively by actually doing. Put at his disposal and to work the equipment and tools he should use. These are "teaching aids," not "museum pieces." Check closely and correct errors calmly, patiently, and thoroughly. Encourage him and give him additional work.



GROUP INSTRUCTION: In our school and industrial training programs, well planned group instruction is very essential. An opportunity for free informal discussion should be provided whenever possible. Divide your group according to student abilities and stress the development of leadership. Keep group objectives high but maintain flexibility.

INDIVIDUAL INSTRUCTION: The personal contact between instructor and student is the focal point of good teaching. Know your student, his attitude, ability, and shortcomings. Recognize different activity levels in the same field and make provisions for individual differences in the students. Assign interesting work, explain projects in detail, allow for student demonstration and questions; put him "on his own" and follow up.

GROUP AND INDIVIDUAL ACTIVITY: The location, type of activity, and time schedule will determine whether the group or individual approach should be used. In the laboratory, shop, or classroom it is possible, however, to have group and individual work in progress at the same time. Use the methods and technics best suited to your individual teaching problem.

CHECKING: Do not assume the job (teaching) is done. Check frequently for method, speed, and quality. Help the student develop confidence, work correctly, and safely. Keep an accurate record of his progress.

AVA Holds Successful Convention at Atlantic City

LEADERS in industrial arts expressed gratification at the recognition given their field at the 43rd Annual Convention of the American Vocational Association in Atlantic City, N. J., December 6-10 by the election of Frank C. Moore, director of industrial-arts education, Cleveland, Ohio, as president, and by the action of the convention in recommending greater activity on the part of the association in the industrial-arts area.

The convention attracted a registration of nearly 3000 to make it one of the largest gatherings of the association.

The 1950 convention will be held in Miami, Fla., November 28 to December 2 while the 1951 meeting will be in Minneapolis, Minn., subject to the ability to make proper arrangements.

As president, Frank C. Moore succeeds E. L. Williams of the Texas A. and M. College who becomes director of the vocational guidance section of the AVA. Charles W. Sylvester, assistant superintendent for vocational education, Baltimore, was reelected treasurer.

Elected vice-presidents for three-year terms for their respective sections were: industrial education, J. C. Woodin, director of industrial and adult education, Wichita, Kans., and industrial arts, Roy G. Fales, chief, bureau of industrial-arts education, New York State Department of Education. Mrs. Eva W. Scully was elected to a one-year term as vice-president for homemaking education. She is state supervisor of homemaking education for Arizona. The other vice-presidents do not change this year. L. H. Dennis continues as executive secretary. His three-year term does not expire until next year.

Mr. Dennis, in his annual report, stated that the total membership of the AVA

(Continued on page 27)

IN THE Morning Mail . .

[Brief comments about SCHOOL SHOP and the field it serves are invited. Address the Editor, SCHOOL SHOP, Ann Arbor, Michigan.

Gentlemen:

I enjoyed the "Types of Teachers" in the November SCHOOL SHOP (page 8) very much. I am now waiting impatiently for a sketch on "Types of Administrators" such as: (1) the textbook administrator; (2) the paper-war administrator; (3) the type who refuses to recognize problems; (4) the type who believes the solution to all problems is "better teachers"; (5) the type who gives more and more extra work but no time in which to carry it out.

T. D. Paolucci, Endicott, N.Y.

Gentlemen:

"Where is Industrial Arts in the AVA" was the title of a recent commentary in these columns by Professor Thomas Diamond of the University of Michigan. Our hats are off to you, Professor Diamond, for your timely comments on the possible causes of "the obvious lack of interest in the AVA on the part of industrial-arts teachers." We agree wholeheartedly with you on some of the remedial measures you suggest and intimate. We believe that we are of the "same family" and have "common interests," but only a small measure of success will have been reached when all of our colleagues feel this way, too. You struck the keynote to much of the difference between us, however. One of the greatest barriers lies in the difference between *those who are* and *those who are not* reimbursed; the reimbursed being those who suffer no personal loss from travel and advancement, and the nonreimbursed being those who pay for their own.

The *American Vocational Journal* is a very fine periodical, and it gives much attention to industrial arts. It would be erroneous to say, nevertheless, that this publication is extremely beneficial to the average industrial-arts educator. This periodical is about all he ever sees of AVA. He is highly pleased to see the development and revision of the *Standards of Attainment in Industrial-Arts Teaching*, even though he is not permitted to meet with others in his field, exchange ideas, grow, and develop as the "reimbursed" do. His plight seems to be one of waiting for the "news" which arrives via the U. S. Mails. Even so, we believe that he should support the strong organization which is doing so much for him and which is so concerned about his welfare. . . . . .

Adding another "major task" for all of us in AVA to consider, why not use the influence of this great organization to encourage state and local school administrations to set aside moneys in the general education budget for key men in industrial arts to use in attending important meetings of the "family," industrial education? Regular attendance is important. Since many "reimbursables" in industrial education are in administrative positions, it would seem appropriate and wise for them to initiate immediately programs such as this. The AVA could provide the leadership for such a movement!

Ralph O. Gallington,
Professor of Industrial-Arts Education,
Pennsylvania State College.

Gentlemen:

Many of your readers undoubtedly make the projects described in SCHOOL SHOP. The dividing head shown in the photograph was made from plans in the March, 1949, issue by students in my class who finished it just before the summer vacation. Perhaps other readers have pictures of projects made from plans in the magazine. It might be interesting to publish them.

Leonard A. Kroll,
Gompers Voc. & Tech. H. S.,
Bronx, New York.

[EDITOR'S NOTE: Readers who have made projects are hereby invited to send in pictures of them for publication.]

Gentlemen:

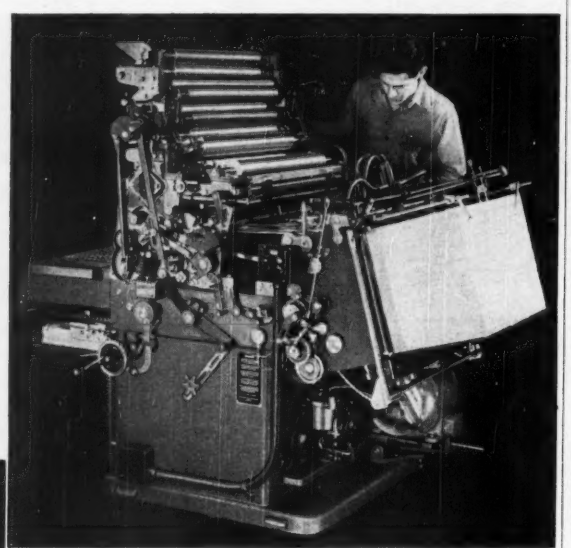
In answer to the editorial in SCHOOL SHOP on industrial arts and the AVA, there is one thing most people have overlooked. That is a definite program of information on the AVA. For instance, many teachers of industrial arts are not informed fully on who to contact or how to contact the AVA to become members. Most industrial-arts teachers cannot attend the national meetings and I do not know of any state meetings.

Nolan Russell, Hopkinsville, Ky.

Gentlemen:

Where is industrial arts in the AVA? That is the $64 professional question. Professor Diamond is to be commended for his forceful editorial on the question in the November, 1949, issue of SCHOOL SHOP. Here are some observations.

1. The vast majority of the 32,000 industrial-arts teachers in this country are not members of any organization representing their profession. In my opinion the reason for this is that no organization has made an all-out effort to be of *practical service* to industrial-arts teachers. The industrial-arts teacher cannot see the sense of belonging to an organization whose annual meetings he is unable to attend, and whose monthly publication is of little or no help to him in his daily work.



ATF CHIEF 22

Ideal for* OFFSET *instruction

Offset cannot well be left out of the curriculum of the modern graphic arts department. It is the most rapidly growing printing process today. The ATF Chief 22 is particularly suitable for teaching offset lithography, because of its unique design and construction. Adjustments for positioning the pile, setting the feeder, controlling the ink and water distribution and the automatic-lowering pile delivery are simple and easy for the student to reach. Cylinders are readily accessible for washing up or changing plates. The 17″x 22″ sheet size is ample for all school work. A student trained on any one of the ATF offset presses will easily adapt himself to the operation of any sheet-fed offset press on the market.

Detailed information on this and other ATF equipment for printing departments, as well as complete cooperation in layout and planning, is freely offered.

American Type Founders
Department of Education
200 ELMORA AVENUE, ELIZABETH B, NEW JERSEY

2. The policy under which the presidency of the AVA is rotated between agricultural, trade and industrial, and home-making education has created the impression among industrial-arts people that they are relatively unimportant in the organization. . . .

3. Industrial-arts teachers, of course, have much in common with all teachers, particularly with industrial-education teachers. Many industrial-education teachers, coordinators, and directors have had industrial-arts teaching experience. Frequently the same facilities are used by both programs. Trade and industrial education students invariably have had industrial-arts training. Hence the need for cooperation. Everything possible should be done to encourage their working together. . . .

4. One reason for the very poor showing of industrial-arts teacher membership in the AVA is due to discrepancies in classification. . . .

5. What can be done? The AVA can appeal to industrial-arts teachers by allocating *regularly* space in the *AV Journal* to industrial-arts education. *Practical aids to teachers should be stressed.* Some of the most popular bulletins published by the AVA are those having to do with industrial arts. The AVA might take the lead in sponsoring regional meetings making it possible for more teachers to attend. The AVA could organize an educational campaign to acquaint industrial-arts teachers with the many advantages of maintaining membership in the AVA. This might be done through state associations. The National Association of Industrial Teacher Trainers (affiliated with the AVA) might consider an educational program to promote student membership in the AVA (now available under the new AVA constitution).

6. In my humble opinion the industrial-arts teacher should support the AVA through membership in the industrial-arts section. However, this is not enough. He must take an active part in seeing to it that his organization is functioning in his professional behalf. Just imagine what the potential strength of 32,000 industrial-arts teachers could do!

Dewey F. Barich, Head of Industrial Arts,
Kent, Ohio, State University.

Gentlemen:

I am glad you are giving readers the opportunity to comment on the views expressed in the column, "School Shop Talk." Professor Diamond posed four questions on the AVA in the November issue. According to this reader's observations the answer to all four of his questions is "Yes." It is really quite hard for an industrial-arts teacher to join the AVA because he is supposed to send in his membership dues to the AVA through his state vocational association. This forces him to join the state vocational association and in some cases (I don't know how many) at least, there are state vocational associations that provide no programs at all for the industrial-arts teachers. The industrial-arts teachers probably feel that the industrial-arts section of the AVA is only a "tar bucket." The industrial-arts teachers now have their own national association which gives them more of a feeling of professional grown-upness.

Then, too, there is the matter of nomenclature. The term "vocational" is too all-inclusive. Not everyone knows that it covers mostly just the narrow fields of specialization in high schools that are reimbursable from state and federal funds. There are many other vocations on both the high-school and college levels including the professions. A goodly number of industrial-arts teachers turn out students from high school that make good workmen and have a better general education than many who are the products of the so-called vocational courses. They are thus rendering a vocational service to youth and this is an essential part of general secondary-school education. Also, the industrial-arts teacher is a professionally trained teacher with a degree. This is not true with so many of the teachers of the federally subsidized vocational courses. The industrial-arts people start their programs in the grades as an integral part of the general education program. It can then be carried into the high school either as general industrial arts or vocational industrial arts. The arts of industry thus receive emphasis according to type of community program wanted.

No doubt when federal funds are made available for general education purposes the industrial-arts programs will be benefited and the young men who prepare themselves for industrial-arts teaching careers will receive compensation commensurate with that of other college-trained professional people. It is doubtful if the AVA can ever interest many of the industrial-arts people because the chief interest of the AVA is not with this group. People or groups of people go where they find their own kind and can feel important.

Lawrence G. Lindahl, Personnel Director,
The Todd Company, Inc.,
Rochester, New York.

Gentlemen:

I have read with considerable interest the article "Where Do Teacher Trainers Train?" on page 12 of the October issue. . . . I was interested in noting the number of them who have advanced degrees. I could not help wondering, however, if in the backgrounds of industrial-arts teacher trainers there should not be some mention of how many years of actual industrial experience they have had.

Herbert Warfel, Township H.S., Joliet, Ill.

BOICE-CRANE SIX-INCH JOINTER

Tables are 5" longer than most others, for the accurate jointing of 25% to 50% longer stock, and the fence is 33" long (10" longer than most others). The ONLY fence that is 100% rigid. The only 6-inch jointer with quick acting fence locks at BOTH ends. The 2¾" diameter cutterhead has a 3" diameter cutting arc, the largest in any low-priced 6-inch jointer, for freer cutting "rake-angle" to knives, for a chatterless and much smoother shearing cut rather than the chipping and chattering cut common to smaller diameter cutterheads. Cutterhead and bearings will withstand speeds up to 5500 r.p.m. Dual fence controls BOTH at operator's fingertips. Floor cabinet has motor compartment and dust chute. 4 models, belt or direct motor drive, bench or floor type. Overall length: 43½". Tables: 6" wide x 36" long. Fence: 33" long x 3⅝" high. Max. width of cut: 9". Depth of cut, max.: 9/16". Cutterhead: 2⅝" dia. 3 knives.

Boice Crane TRU-FORM* RELIEF SAFETY CUTTERS

First correctly made milled-to-pattern shaper cutters at moderate prices. Real production-type two-wing cutters with the advantages of costlier CIRCULAR or INVOLUTE* relief. This new principle machines the shape into the cutter on an arc that assures clean cutting without burning. Safer than knives. Cut the same true original shape and dimensions, right up to the last sharpening. Larger rake, or cutting angle, shears or shaves, doesn't scrape. Up to 50% more usable life. Adequate initial clearance angle for higher spindle speeds, which never changes when properly sharpened. Result—faster cutting, more production, cleaner cuts. More metal behind cutting edges, reduces chipping, crumbling, under heavy cuts; dissipates heat faster on high speed shaping. Fine, tungsten tool steel. Deep hardened and oil tempered. Precision formed. Razor sharp. Authentic, full-sized commercial shapes. Average 3¼" diameter for higher peripheral speed. Designed for the rugged Boice-Crane shaper but improves performance in all other makes.

(*Also called flattened-arc relief; cam-profiled relief.)

BOICE-CRANE FRICTION-MATIC WET TOOL GRINDER

Sharpens hand tools without danger of damage to tools or personal injury. Simplified self-adjusting friction roll drive. Peripheral speed remains constant as wheel wears. No water thrown on operator. Permits proper pressure control. Operator takes a comfortable standing position and works on top of the wheel. Large tool rest, the first with adequate adjustment.

BOICE-CRANE INTERMEDIATE CAPACITY POWER TOOLS

- Designed for ready adaptability to a wide range of projects, fewer machines are needed to fill all your requirements.
- As nearly 100% safe as modern devices permit.
- Just the right size for school shops—not too big, nor too small. Permit more efficient shop layouts.
- Durably constructed, they can take a beating which would incapacitate most machines.

BOICE-CRANE COMPANY
938 Central Avenue • Toledo 6, Ohio

Please send free literature on Boice-Crane's ( ) Jointer ( ) Wet Tool Grinder ( ) New 44-page catalog No. 50 on entire line ( ) Bulletin on Tru-Form Relief Cutters for Shapers

NAME _____
SCHOOL _____
STREET _____
CITY & STATE _____

School Shop KINKS

Payment will be made for each Kink published. Send to Editor, School Shop, Ann Arbor, Mich.

Substitute Solvent

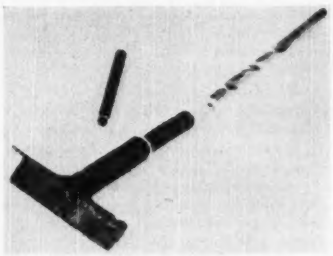
Some time ago in "School Shop Kinks" it was suggested that nail polish was a good substitute for plastic wood solvent. It's true that plastic solvent is very expensive, but we have found another way out. We find that lacquer thinner makes an excellent plastic wood solvent. It is relatively inexpensive and most school shops are likely to have it in stock. By using thinner you can eliminate an item from the supply purchase list.—*Sylvan A. Yager, Terre Haute, Ind., State Teachers College.*

A "Scotch" Burr Idea

Saving money and at the same time solving a problem of where to get an item should appeal to all shop teachers —Scotch or not. The present interest in the carving of various plastics projects presents us with the question of where our burrs are coming from. The initial cost of the small hand motor tools is often too much to allow for burr purchases. Try going to your dentist and asking him if he won't give you his old burrs which have become dull. They are of no use to him but they can serve many hours in the shop.—*John W. Joyce, Newport News, Va., High School.*

Round Stock Jig

Quick and accurate centering of holes to be drilled in tubing, pipe, or drill rod is possible with the drill jig shown. A length of tubing welded to a small piece



of angle iron provides the basis for the jig. Telescoping sleeves of smaller diameter tubing are inserted in the larger sleeve of the jig to accommodate various sized drill bits. Accurate holes are possible when using a portable drill if this jig is used.—*J. W. Rocke, Globe, Ariz., Vocational School.*

Stain With Chalk

Pupils in the lower grades may be expected to have trouble applying stain to their completed projects. I have found that ordinary chalk (of which all schools should have plenty) can be used to make their staining tasks easier and more rewarding to them. The project is sanded in the usual way. Then, the white or colored chalk is rubbed over the sanded surface and the sandpaper used again. This sanding grinds the chalk into the wood and helps to fill the grain. Projects then are carefully dusted and white shellac is used for a final finish.—*James B. Lidstone, Edward Devotion School, Brookline, Mass.*

Tool-Crib Attendant

One way to make sure you have an attendant on duty in the tool crib all the time is to assign an advanced student to the job. Let his responsibility be to keep drills, taps, reamers, and mill cutters properly sharpened. He can adjust micrometers, check threads for proper fit, and make preliminary inspections of projects of other students. Furnish him with a pedestal grinder and a small bench lathe and assign him small jobs from other school departments. The shop inventory could also be his responsibility. Under this system, the job of tool-crib attendant is coveted, not shunned.—*Francis P. Cooney, Waycross, Ga., Vocational School.*

SHELDON
PRECISION LATHES

TEACH THE GREATEST NUMBER
of operations . . . at least expense
. . . with greatest safety!

The Sheldon TUS56 Precision Lathe is not only the finest school lathe, it is also the most practical. Its large capacity, full size standard controls permit the teaching of all lathe operations at standard industrial speeds and feeds. Its "Zero Precision" (Timken finest) Taper Roller Spindle Bearing permit working to the very closest tool room tolerances and hold their extreme accuracy without servicing even under years of student operation. It's safer because all belts, motor and drive are completely enclosed—speed changes are made entirely with external levers.

Write for Catalog

No. 3000 Milling Machine

No. 8000 12" Shaper

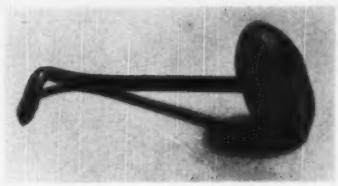
L-44

SHELDON MACHINE CO. Inc.
Manufacturers of Sheldon Precision Lathes • Milling Machines • Shapers
4260 N. KNOX AVENUE • CHICAGO 41, ILLINOIS, U. S. A.

Chase the Chips

By Reuben H. Childers

Faceplate and chuck threads can be kept clean by the use of this excellent little project which requires many machine-shop operations for making. Reuben H. Childers is head of the machine shop in the Dubuque Senior High School, Dubuque, Iowa.



TESTED PROFESSIONAL PROJECT

ONE of the annoying and difficult little jobs around the machine shop is the cleaning of chips out of the threads in faceplates and chucks. This little device can be used to do the job quickly and effectively.

Each student can make one of these thread chasers for his own tool kit. A set of them can be made in various sizes to fit the faceplates and chucks in the school shop. This set can be part of the regular shop equipment.

The machining operations in the fabrication of the project are basic in machine-shop practice, yet are relatively simple. They consist of shoulder turning, drilling, radius turning, countersinking, boring, bending, forging, filing, and peening.

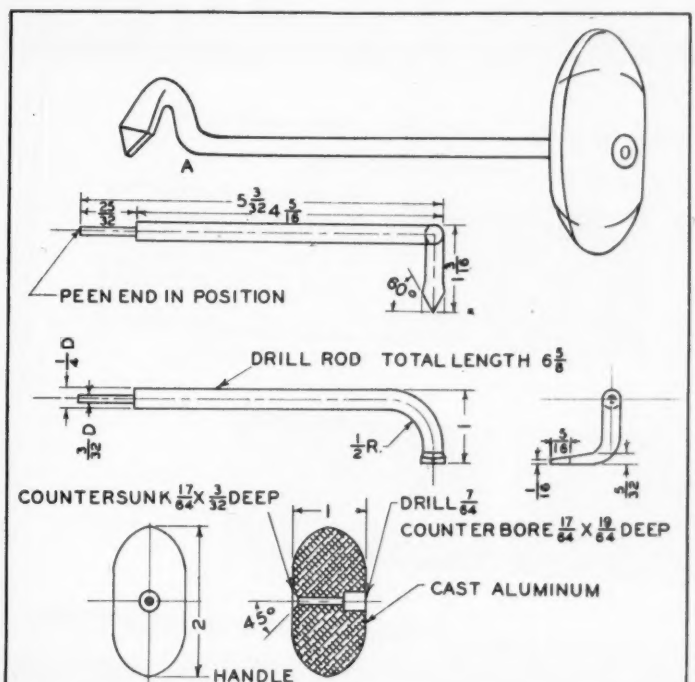
Students enjoy working at this project which will give them a useful tool.

The tip of the thread chaser should be magnetized by using a magnetic chuck or some other device so that the chips will stick on the point of the tool as it is chased through.

The thread chaser is operated by holding the handle in the palm of the hand and placing the fingers lightly around the shaft. The point of the tool is then placed in the first thread, keeping a slight pressure at point *A* (see drawing) of the tool. Chase the tip of the tool around the inside of the faceplate or chuck and the loosened chips will adhere to the point because of its magnetism.

The shaft can be made of drill rod and the handle of aluminum or brass.

Machine-shop teachers will find that this project is particularly helpful in keeping faceplate and chuck threads clean of chips and grease which, in turn, keeps the spindles from becoming damaged and worn.



SOLDERING IS A CINCH

when you know these SIMPLE TRICKS!

No matter how much you know about soldering, there's always a trick that will make it easier. This little 20-page pocket guide is crammed full of such time-and-trouble savers.

Without wasting words, it covers the whole soldering operation—points out DO's and DON'T's—refreshes your memory on difficult points—suggests methods that help you work faster. Yet there's no hard studying, no tough technical talk. Every word is plain everyday English and every point is made clear by easy-to-understand illustrations.

Get this handy Soldering Guide today, and keep it on your bench for ready reference. It's a real handbook of professional soldering—*not* a catalog. Just mail the coupon with 10c in coin and we'll send your copy at once.

When you send for your Guide to Easy Soldering, be sure to ask about the New Weller Soldering Guns. They're a handful of convenience, better from tip to grip.

WELLER
MANUFACTURING COMPANY

Weller M.fg. Co. 827 Packer St., Boston, Pa.

Enclosed find ten cents (10c) for which please send my copy of the Weller "Soldering Tips".

☐ *I am also interested in the new Weller Soldering Guns. Please send Catalog Bulletin.*

*Name*_____

*Address*_____

*City*_____ *State*_____

The machines you need are in

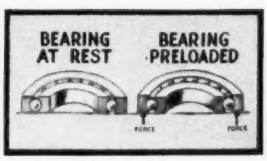
These typical quality features insure long life, continued accuracy, and low maintenance costs!

Lubricated-for-life Ball Bearings

Never need oiling—they're lubricated for life before they leave the factory. Double-sealing keeps dirt out, lubricant in.

Precision-bored Bearing Seats

Perfectly round, true to size, correctly positioned, properly aligned. Bearings fit closely, are tightly held, cannot become loose.

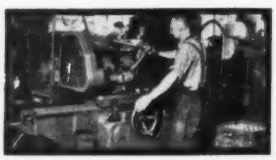


Preloaded Bearings

An extra manufacturing operation removes "end play." This provides maximum rigidity and accuracy under load and increases bearing life.

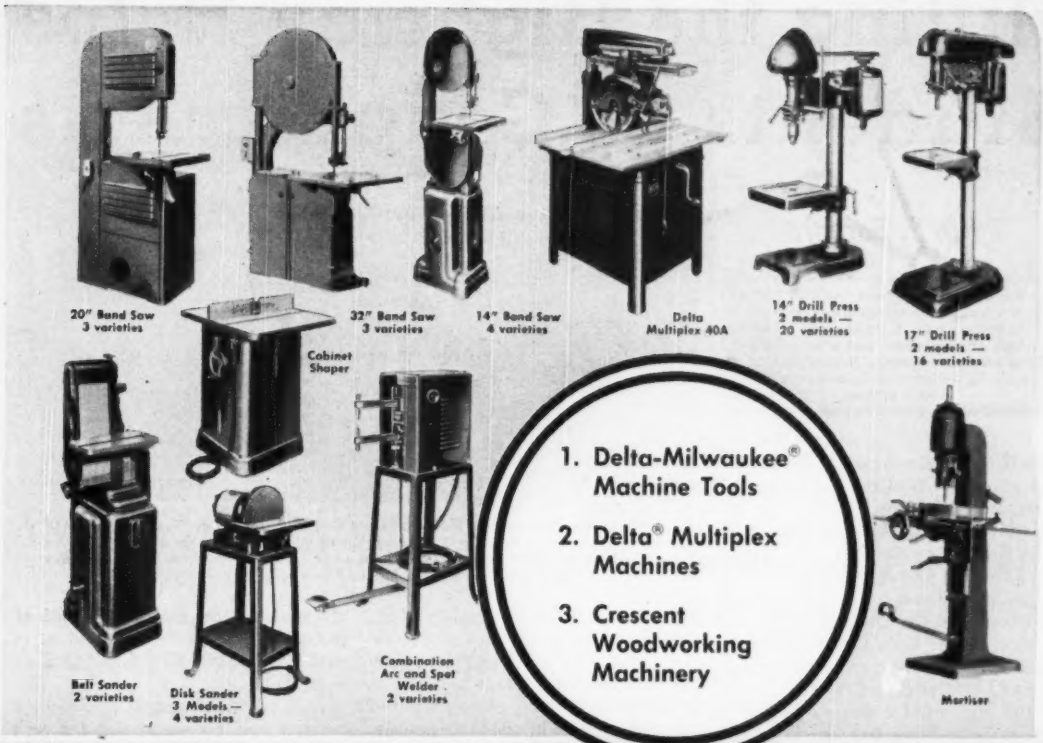
Precision-ground Shafts

All spindles, arbors, and collars are ground for accuracy, to provide full, even contact between shaft and bearing — and assure accuracy.



Dynamically-balanced Pulleys

Pulleys which transmit the power from motor to machine are dynamically balanced to help eliminate damaging vibration.



Delta's complete, quality line!

Safe! Right for size! Easy to run! Economical!

It's easier to get your requisition approved, when you specify a Delta machine. You choose the one that *exactly fits your program and budget* from the most complete line available—the only line with complete accessories for every tool. And you are sure *your* students are well equipped to take their jobs in industry when they graduate; practically every branch of industry uses Delta quality tools.

Delta machines are compact, portable, occupy little floor space — just the right height for students. All models have approved safety devices to protect students from working parts. And all machines are built to withstand abuse.

Yes, in woodworking and metalworking machines, the *right* tool for your shop is in the *complete* Delta quality line. *See Delta first.*

Send the coupon below for facts on every tool in the entire Delta line—and for free copy of "How to Plan a School Workshop."

Look for the name of your Delta distributor under "Tools" in the classified section of your telephone directory.

POWER TOOL DIVISION
Rockwell
Manufacturing Company
MILWAUKEE 1, WISCONSIN

TEAR OUT COUPON AND MAIL TODAY!

Power Tool Division
ROCKWELL MANUFACTURING COMPANY
712A E. Vienna Ave., Milwaukee 1, Wis.

Send me free catalogs and bulletins on the complete Delta quality line — also booklet, "How to Plan a School Workshop."

Name.....

Position.....

School.....

Address.....

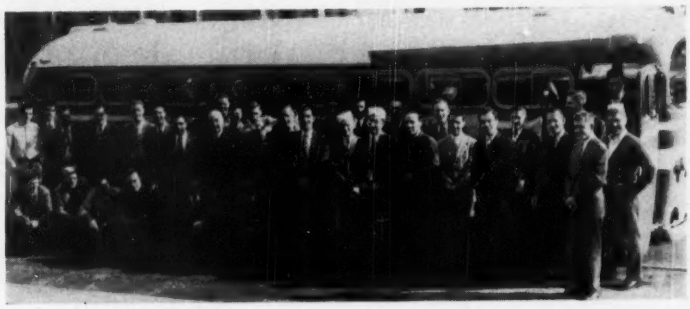
City.....( ) State.....

9-94

Hitting the Highway Helps Students of Graphic Arts

By D. P. Barnard

Teachers-in-training at Stout Institute, Menominee, Wisconsin, who expect to go into graphic-arts instruction take a six-day trip in which they visit printing plants and give demonstrations at secondary schools. Here is an account of the trip by an instructor in audio-visual education at Stout.



Here is the group which went on the graphic-arts field trip last Spring. Student-managers of the trip used a unique device to insure that the bus left on schedule: money for meals was handed out at the scheduled departure time; very rarely was anyone late when he knew that if he didn't get back to the bus on time, he would have to go without a meal.

LAST Spring the Stout Institute Typographical Society went on its seventh annual field trip. The trip covered 1100 miles and included visits at 11 schools and six private printing plants.

The Society financed the trip, as it has in past years, through proceeds from job printing which was done for various organizations and individuals on the Stout campus. In addition, each member was assessed $10 for the six-day trip.

The prospective teachers of printing who make up the Society were interested in seeing the printing installations in a variety of schools. Another objective was to see and to study typical plants and shops in the graphic-arts industry. A highly valuable educational experience which is a part of the annual trip is the demonstration by members of the Society of basic graphic-arts procedures to audiences in the schools they visit. This demonstration technic has value as an aid to the building of speaking and demonstrating ability and to the development of poise.

Participating students were given wide discretionary power in the construction of an itinerary. Society members arranged all details of the trip and faculty members, such as myself, went along as observers and for the ride. Duties of participating members were outlined in advance and each had a definite task on the trip.

Demonstration teams consisting of a narrator and a demonstrator for each process were selected three or four weeks in advance of the trip. They were in rehearsal right up until the time of departure. Other Society members printed the cards which were used in demonstrations before student audiences.

The success of the trip is a practical demonstration of the value of planning. Participating students take the trip seriously; it is a "core" activity of the Society and one for which they plan throughout the academic year.

The following summarizes what I believe are the most important outcomes of the annual junket:

1. The trip broadens the general knowledge which the students have of the industry, especially in areas that have interest for them of a vocational nature.

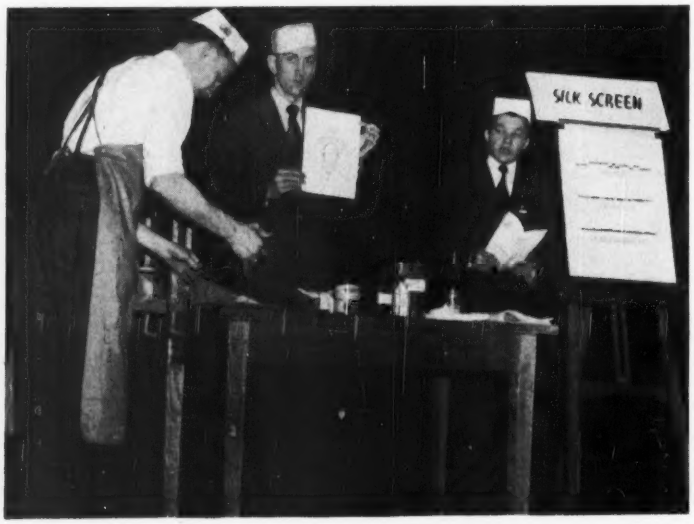
2. Members see actual school conditions of the type that they may well be in when they graduate.

3. They develop a cooperative spirit through working together.

4. As prospective teachers, their social behavior is developed through the opportunity which the trip affords them of being able to meet and converse with school and industrial leaders.

5. There is a real increase in Society members' poise brought about by the use of the demonstration technic.

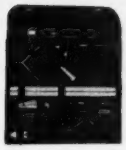
A demonstration team in action on stage at the Thomas Jefferson High School, Council Bluffs, Iowa. Old-time paper hats are used by the Stout Institute Typographical Society to denote rank of club members.



✓ THE RIGHT TOOLS TO BUY

✓ A GOOD WAY TO BUY THEM

Starrett SETS OF TOOLS



SET NO. 902

A more complete set for students and apprentices. Contains a 1" micrometer, 12" comb. square with center head, center gage, center punch, 6" flexible steel rule in case, 4" divider, 4" inside, outside and hermaphrodite calipers. Simulated leather folding case.

SET NO. 900

The basic tools at minimum cost. Contains 6" comb. square complete, 6" flexible steel rule, center gage, center punch, 4" divider, 4" inside, outside and hermaphrodite calipers. Simulated leather folding case.

SET NO. 901

A practical, economical "package"—contains 6" comb. square complete, 6" flexible steel rule in leather case, center gage, center punch, 5" divider, 4" outside and inside calipers plus The Starrett Book for Student Machinists—all in a sturdy, compact, nicely finished wood case.

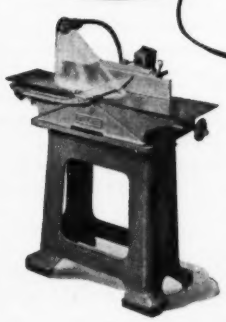
Ask your Starrett Tool Distributor or write for complete information.

ADDRESS DEPARTMENT SS

Starrett — *Standard of Precision* — MECHANICS' HAND MEASURING TOOLS AND PRECISION INSTRUMENTS · DIAL INDICATORS · STEEL TAPES · HACKSAWS · BAND SAWS AND BAND KNIVES · PRECISION GROUND FLAT STOCK — *Buy Through Your Distributor*

THE L. S. STARRETT CO. · *World's Greatest Toolmakers* · ATHOL, MASSACHUSETTS, U.S.A.

FOR BETTER JOINTING AND PLANING!



No. 10 JOINTER

Direct drive at 3600 or gear drive at 5200 r.p.m.! 8" FOUR-knifed cutterhead with knives set askew for SHEARING cut! Taper roller bearings. Semi-steel tables. Capacity to cut to ¾" deep.

What a Jointer! This quality-built Wallace No. 10 Model has power, speed, capacity and accuracy in a measure never known before!

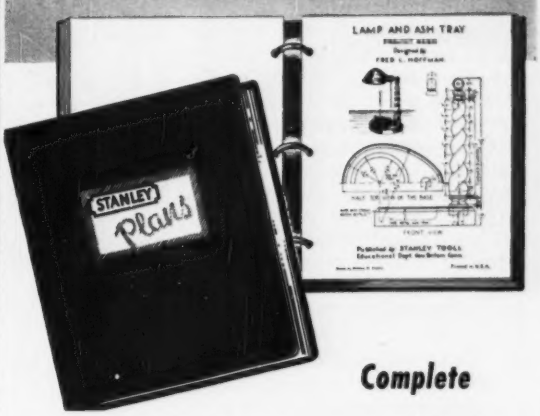
SKEW-set knives take a shearing cut—does PERFECT edging work, rabbitting, bevelling and planing. Smooth, clean surfacing cuts seldom require sanding.

Write today for bulletins.—We also manufacture quality-built universal saws, radial saws, bandsaws, shapers, lathes, mortisers.

J. D. WALLACE & CO.

170 S. California Ave. Chicago 12, Ill.

STANLEY PLANS



Complete in a Good Quality, Loose-Leaf Binder

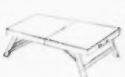
95 PLANS

Here it is . . . the complete, modern source-book of plans for shop projects . . . in loose-leaf, handy-to-use binder . . . a ready reference of shop woodworking plans! This is a special, time-limited offer, so take advantage without delay. Mail the coupon with check – available only in U.S.A.

$2. – COMPLETE – POSTPAID

INCLUDED ARE PLANS FOR THE FOLLOWING

Hanging Shelves • Table Lamps • Trays • Small Tables • Gift Projects • Mirrors • Smoking and Magazine Stands • Tables and Stands • Workshop Equipment • Lawn Chair • Sewing Stand • Coffee Table • Book Shelf • Bird Houses • Garden Furniture • Small Colonial Furniture • Children's Toys • Folding Tables and Trays • Card Tables • Nests of Tables • Bedside Chair • Child's Rocker • Etc., Etc. (These are the same Stanley Plans offered in the 19 individual plan sets.)



THE TOOL BOX OF THE WORLD

STANLEY

Reg. U. S. Pat. Off.

HARDWARE • HAND TOOLS • ELECTRIC TOOLS • STEEL STRAPPING

MAIL NOW

STANLEY TOOLS, Educational Dept. SS 150
New Britain, Conn.

Please send postpaid the complete sets of Stanley Plans with Loose-Leaf Binder. $2.00 is enclosed.

Name .....

School Name .....

Address .....

City ..... *State* .....

News

HAPPENINGS IN INDUSTRIAL EDUCATION

Growth in Illinois

NEWLY established departments of industrial education have been created in a number of Illinois school systems this school year. Communities which now have industrial-arts shops are Altamont, Athens, Annawan, Ashton, Brighton, Carlinville, Crete, Heyworth, Kenney, Kincaid, Kirland, Indianola, Manlius, Moweaqua, New Boston, Newman, Newton, Norris City, Paxton (junior high), Peotone, Sheffield, St. Anne (junior high), Stockton, Sullivan, Tolono, Varna, Warrensberg, Wyoming, and Zeigler.

Convention Calendar

OHIO INDUSTRIAL ARTS ASSOCIATION, February 23-25, Columbus.

CONNECTICUT INDUSTRIAL ARTS ASSOCIATION, March 24-25, New Britain.

CALIFORNIA INDUSTRIAL EDUCATION ASSOCIATION, March 24-25.

ILLINOIS VOCATIONAL ASSOCIATION, March 30-April 1, Chicago.

MICHIGAN INDUSTRIAL EDUCATION SOCIETY, April 20-22, Grand Rapids.

SPRING CONFERENCE ON INDUSTRIAL EDUCATION, April 21-22, University of Missouri, Columbia.

INDIANA INDUSTRIAL EDUCATION ASSOCIATION, April 27-29, Turkey Run State Park.

TEXAS VOCATIONAL ASSOCIATION, May 5-6, Galveston.

AMERICAN INDUSTRIAL ARTS ASSOCIATION, May 11-13, Cincinnati, Ohio.

Workshop on Visual Aids

A TWO-WEEK workshop in the use of visual aids was conducted at the University of Texas in November at the request of the Southern Regional Conference and the U. S. Office of Education. Designed for state supervisors and teacher trainers in industrial education, the conference drew participants from the Midwest and Far West as well as from the southern states. Staff members were G. G. Weaver of the University of the State of New York, M. L. Barlow of the University of California, and D. W. McCavick and James R. D. Eddy of the University of Texas.

New England Meeting

OVER 200 teachers, representing six states in the area, met at the New England Industrial Arts Teachers Association convention in Providence on November 4-5. A symposium was held on life-adjustment education and industrial arts as well as discussions of teaching technics in various shop areas. Among the speakers was E. E. Ericson of Santa Barbara College. New president of the association is Ralph E. Miller, Jr., of East Providence, R. I. Clifford Feindel of Marlboro, Mass., is vice-president; Arthur I. Martin of Gorham, Me., is secretary; and Colin H. Gray of Barre, Vt., is treasurer. G. Wesley Ketcham of Hartford, Conn., is divisional director, professional development.

Newark Meeting

AN industrial-arts conference at the State Teachers College, Newark, N. J., on October 26 attracted over 300 administrators, supervisors, and teachers from the area, according to Carl E. Frankson, chairman of the industrial-arts department. Sponsored jointly by the department, Omicron chapter of Epsilon Pi Tau, and the Industrial Arts Club of the college, the featured speakers were John R. Ludington of the U. S. Office of Education and Dean Ralph Pickett of NYU.

Strictly Personal

ABOUT YOUR FELLOW TEACHERS

GEORGE H. FERN, former director of the Scholastic Industrial Arts Awards and editor of the *Americal Vocational Journal*, has been named assistant director of the education department of the National Association of Manufacturers, Washington, D. C. . . . R. LEE HORNBAKE, professor of industrial education at the University of Maryland, is studying at Harvard University Graduate School of Education as a recipient of one of three educational fellowships. . . . LOWELL A. BURKETT has been appointed supervisor of industrial arts for the northern half of Illinois by the Illinois State Board for Vocational Education. . . . KENNETH L. BING has been named head of the department of industrial arts at East Carolina State Teachers College, Greenville, N. C. . . . OSCAR B. LINDHOLM, director of the Waukesha, Wis., Vocational School, died recently. . . . E. J. SIMON, State Director of Vocational Education for Illinois, was recently awarded the honorary degree of Doctor of Laws by Bradley University, Peoria, in recognition of outstanding service to the state. . . . New staff members of the department of industrial education, Iowa State College, Ames, are FRANK E. WELLMAN and DURWIN M. HANSON. . . . DOUGLAS B. HOBBS, who was in charge of the educational information activities of the Aluminum Company of America, died recently at 49 years of age. . . . RALPH C. WENRICH, state director of vocational education for Michigan, will succeed THOMAS DIAMOND, retiring, as head of the department at the University of Michigan.

APRONS

Thirty-five years' experience and knowledge of the students' needs. From this experience we know the best apron requirements for your students. Guaranteed to please. Made in 3 sizes, 5 colors.

WRITE FOR NEW ILLUSTRATED PRICE CIRCULAR
and complete information on aprons and coats for student and instructor.

CANVAS PRODUCTS CORPORATION
"The School Apron Folks"
P. O. Box No. ONE FOND DU LAC, WISCONSIN

FREE TO RADIO INSTRUCTORS
invaluable TELEVISION Teaching Aid

Send today for FREE PHOTOFACT Folder covering the famous RCA 630 Television Receiver. Use this 26-page analysis of this important circuit for effective TV instruction. Presents detailed technical data, circuit and block diagrams, photographic views of chassis, full parts, circuit alignment, and servicing data—all based on actual laboratory study of the receiver. You'll want this valuable TV teaching aid. Send for your FREE PHOTOFACT Folder now!

HOWARD W. SAMS & CO., INC.
955 RURAL STREET • INDIANAPOLIS 1, INDIANA

Teaching Tools

POINTERS ON INSTRUCTION and SHOP ADMINISTRATION

By John F. Nowak

Tool Crib: Whose Baby? TWO points bear the brunt of student traffic in every school shop—the spot at which the teacher is located (desk, writing stand, etc.) and the tool crib. The teacher is, naturally, in charge wherever he is located, but he must surrender the operation of the tool crib to the students.

Three considerations are important in establishing student maintenance of tool controls:

Overall Checking. The teacher should check the tool crib before and immediately after each shop session. The best checking device for this is a visible set-up wherein each tool is individually mounted on a rack. You can even outline each tool on the rack with paint so it will be simple to tell which is missing.

Another checking device is the use of a notebook. Student custodians of the crib place their signatures in the book under the current date, either stating that all tools are present or listing the missing ones. Instructors countersign the book if their check corresponds with that of the student. This method assures that there will be a check of tools attested to by signature and is especially suited to situations in which two or more teachers share the same shop.

Issuing and Receiving Tools. The teacher should choose between (a) the check system and (b) the requisition system.

(a) The check system requires that each student have a supply of metal checks which can be turned in when tools are checked out. As each tool is returned, the crib attendant gives the student his metal checks again.

(b) The requisition method requires the use of pieces of paper of uniform size, on which is written the names of the tools required, the date, and the class, and to which the student affixes his signature. When all tools are turned in, the requisition is returned to the borrower.

Each student should have the responsibility at least one period a term as a tool-crib attendant.

Rotation of Student Responsibility for tool crib maintenance. Each student in the shop class should experience, at least once each term, responsibility for the tool crib. A simple method to insure equal distribution of the chore is to prepare an alphabetized list of the class. Next, consult a calendar and allocate the assignments according to school days in the term as against the list of names on the roster. This list, with assignments, should be posted on the bulletin board so that each student will know his assignment in advance.

Questions and Answers

Q. Must a shop teacher fill out the report form on an accident which he did not witness but which he came on in an unassigned period? (J. K.)

A. A teacher is on a school staff which makes him a member of a family, so to speak. As representative of the principal who is responsible for all the area covered by his school, the shop teacher has the duty to "take over" in any emergency. Once having taken over, he has the further responsibility of carrying through on the paper work connected with a case. The answer, then, is yes.

Q. There are four types of instruction sheets, *job*, *operation*, *information*, and *assignment*. Must I use all four? (C. L. I.)

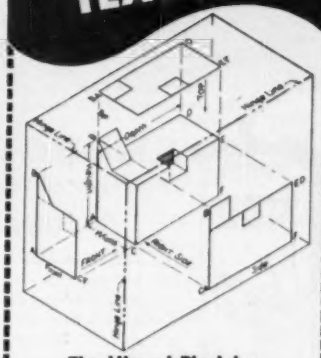
A. Not necessarily. In teaching shopwork, all "doing" jobs require *job* sheets. Where an operation is included in the job sheets which presents an element of difficulty for the learner, an *operation* sheet is helpful. If the instructor desires to prepare his own related information for a job (or for the course), then an *information* sheet may be used. Where sufficient testing in terms of need and space on a job sheet cannot be included, an *assignment* sheet is prepared.

Question Box

As a complement to this department, readers are invited to send in questions which relate to methods of teaching shopwork. If a personal reply is desired, include a stamped, selfaddressed envelope. Send questions to:

John F. Nowak
Postoffice Box 869
Church Street Station
New York 8, N.Y.

MODELS FOR TEACHING



The Hinged Plexiglas Projection Box

MODELS AVAILABLE TO ILLUSTRATE MOST ACADEMIC SUBJECTS

- PLANE SURFACES (Wedge and Pyramids)
- PRISMS (Parallelepipeds & Hexagonal)
- EQUILATERAL POLYHEDRONS
- SINGLE CURVED SURFACES (Right and Oblique)
- WARPED SURFACES
- CURVED SURFACES

SPECIAL MODELS for the Five Basic Compound Angles (each model complete with Formulas)

MODELS for illustrating TIME & MOTION, etc.

MODELS for Intersections and Developments.

BASIC MODELS for teaching Engineering Drawing and Descriptive Geometry.

Write today for complete catalog, with illustrations and prices.

CUSTOM MOLDED PLASTICS
253 Park St., Benton Harbor, Mich.

Custom Molded Plastics
253 Park St.
Benton Harbor, Mich.

Please send me, without obligation, your new illustrated catalog "Plastic Models for Teaching".

Name _____

Position _____

School _____

City _____ State _____

Handy Helpers for Every Bench

SYNTHE-WOOD

Ambroid Company's Synthe-Wood mender is just the ticket for those nicks and chisel slips. It is wood in paste form which, when exposed to air, hardens with all the qualities of fine hard wood. Synthe-Wood can be Sawed, Planed, Carved, Painted, Stained, Varnished, and Sanded. Will hold nails and screws too. *Get it at your regular supplier or send 35c for large sample can. Money back guarantee.*

4 oz. can 35c

AMBROID

The Universal Liquid Cement

"It Stays Stuck"

This ready-to-use liquid cement is fast drying with permanent results. For assembling and mending in electrical and woodworking shops, Ambroid has been a leader for 39 years. It is Waterproof, Transparent, and Extra Strong. Get it at your regular supplier or send 25c for large 2 oz. sample tube. 4 oz. tube 50c.

Also in Pints, Quarts, Gallons.

AMBROID

101 Broad St., Boston 10, Mass.

SPECIALISTS IN INDUSTRIAL ARTS LUMBER and PLYWOOD NEEDS

SOFT TEXTURED HARDWOODS AND PINE LUMBER, FIR AND PINE PLYWOOD NOW AVAILABLE IN ALL THICKNESSES

Fischer's modern cross circulating **Dry Kilns,** with automatic humidity and temperature control, assure you of well dried lumber.

Latest type modern mill equipment features a high speed all electric **Matcher** capable of dressing lumber 2 or 4 sides, tongue and grooving, nosing all in one operation.

All Types of Hardwood and Softwood **PLYWOOD**
Particularly White Ponderosa Pine Panels

CHARLES F. FISCHER & CO., Inc.

1380 RANDALL AVE., N.Y. 59 **DAYTON 9-4100**

MAKE and REPAIR Your Own Band Saw Blades *with*

The ERWOOD *Electro* Band Saw Brazer

Complete with brazer, 6 ft. cord, plug, brazing material and fluxes. Shipping weight, 11 pounds. **$19.75**

● No more classroom slowdowns due to broken band saw blades . . . it takes less than TWO MINUTES to repair a blade with the Erwood Band Saw Brazer. And you save money too . . . do inside contour sawing easier and faster. No wasting broken blades . . . make your own band saws from coil stock. Erwood Brazer consists of high current transformer with two resistance electrodes arranged in clamping device. Built for 110 or 220 volt, 50-60 cycle operation. Complete with kit.

THE *Erwood* COMPANY

208 WOODSTOCK STREET • CRYSTAL LAKE, ILLINOIS

ANNOUNCING

GENERAL MECHANICAL DRAWING

By WILLIAM JERVIS, CENTRAL HIGH SCHOOL, SCRANTON, PENNSYLVANIA

Here is a book that offers a new psychological approach to Mechanical Drawing rather than the logical approach that has been used through the years.

In recent years educators have questioned the value of Mechanical Drawing which trains students in skills toward the Engineering profession, but does not train pupils in skills applicable to every day living. Projects were selected because of their relationship to life experiences, and are within the understanding and skills of the pupils. There is no lack of interest, or teacher motivation necessary when tasks or problems selected are those boys have yearned to do.

316 pages, 6 x 9, 369 illustrations, 137 problems, cloth, $2.75

THE JOY OF HAND WEAVING - - - - $4.25
By GALLINGER

CRAFTS FOR EVERYONE - - - - $3.50
By NEWKIRK AND ZUTTER

INTERNATIONAL TEXTBOOK COMPANY
DEPARTMENT 419
SCRANTON 9, PENNSYLVANIA

Elementary Printing Test

By Paul C. Knoop

Jackson Intermediate School, Detroit, Michigan

THIS test for the print shop was designed to cover the work in a one-semester try-out course at the junior-high-school level and, of course, is of an elementary nature. The job sheets used by the students in this course have a definite tie-in with the textbook, *The Practice of Printing*, by Polk.

The bold numerals at the right of each question indicate the value placed on each and total 100. The score for the last question covering the case layout is determined by deducting the number of errors from 21. Other teachers of printing might wish to revise these values.

The test is an outgrowth of evaluating the results of lessons completed with job sheets, textbook assignments, and in handling printing materials. It began with short printed forms which were filled out by students and covered certain units of work which had been completed. Other tests followed for additional units. This led to a revision of the questions and the compiling of them into a more complete test covering the work of the entire semester.

Name..... Grade..... H. R.....

JACKSON INTERMEDIATE SCHOOL

Print Shop Test

1. Before the invention of printing, what were some of the early methods of recording events? (Give four.) **4**

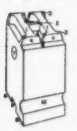
2. By whom, where, and when was printing invented? **3**

3. There are four different kinds of type. What are they? **4**
(1)..... (2)..... (3)..... (4).....

4. What metals are used in making foundry type? **3**

5. Explain what we mean by "type high"? How high is "type high?" **2**

6. Name the 10 parts of a type.



1..... 6.....
2..... 7..... **10**
3..... 8.....
4..... 9.....
5..... 10.....

7. What is the unit of our spacing material? .....
Identify these quads and spaces. **8**

8. Identify the four type characters below.

1..... 2..... 3..... 4.....

(over)

Print Shop Test (Part 2)

9. How is type read? **4**

10. What is the printers system of measurement called? Give the parts of this system. **4**

11. Name 5 things used in locking up a type form.
1..... 2..... 3..... 4..... 5..... **5**

12. Name 5 important parts of the platen press.
1..... 2..... 3..... 4..... 5..... **5**

13. Name and give a simple illustration of the three principle types of presses. 1..... **6**
2..... 3.....

14. What are the main ingredients used in the manufacture of printers rollers? **3**

15. Proofread.

John W Smith 8A 219 Ex No 14a

THE MAKING OF PAPYRUS

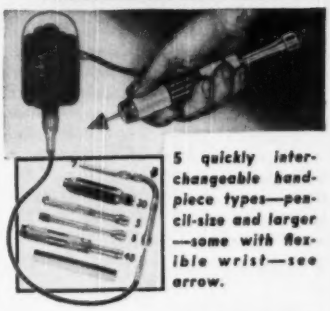
The forerunner of our modern papre was the papyrus of the Egyptians. It was made by interweaving and matting fibersol the papyrus plant onto flat sheets, and smoothing the surface by rubbing with stones. The ancient picture-writing of the Egyptians was often inscribed on scrolls of papyrus. **10**

16. Fill in the case layout.

The California Job Case Layout **21**

8

FOREDOM
Flexible Shaft MACHINES



5 quickly interchangeable handpiece types—pencil-size and larger—some with flexible wrist—see arrow.

. . . *Time-Tested* in VOCATIONAL INSTRUCTION

FOR OVER A QUARTER CENTURY, in industry and in the crafts, many thousands of users have found Foredoms unsurpassed for versatility. Students trained in their use will be better qualified in their chosen callings. New Foredom Models are superior to any other machine in their class.

Use Foredoms to GRIND, POLISH, DRILL, ROUT, MILL, SAW, SLOT, CLEAN, SAND, ETCH, ENGRAVE, CARVE, etc., etc. In industry, they are profitably used in ALL THREE DEPARTMENTS,—production, tooling, and maintenance. Ideal for the astounding new craft, internal carving of plastics.

Foredoms provide extra power and longer motor life because motor is not dwarfed to fit the hand. That is why they are the preferred type of small grinders among skilled craftsmen.

Hang-up models as illustrated and bench models. Foot rheostats are standard with most of them. Models available for as little as $16.95 complete with universal motor. Also available is the PRESTO-FLEX for quick attachment to motors, electric drills and drill-presses priced at only $5.95.

Send for Catalog, S-2725. It will give you valuable information on the many uses for Foredom Machines.

FOREDOM ELECTRIC CO.,
Dept. S-2725
27 Park Place, New York 7, N.Y.

Please send me illustrated catalog No. 2725.

Name .....
School .....
Address .....
City & Zone..... **State**.....

EDUCATIONAL LAMP PROJECTS

Of particular interest to instructors—in woodworking, general shop, plastics, crafts, electricity, and many other shop courses. Students can design and make the body of the lamp. We supply all other parts necessary—sockets, cords, plugs, shades, harps, switches, etc. Over 700 different parts shown in wholesale catalog. A MUST for all instructors interested in keeping students occupied with *highly educational* and *useful* projects. Send today for wholesale price list and parts catalog.

THE GEARON COMPANY
Dept. 100-L1, 27 South Desplaines Street, Chicago 6, Illinois

GENERAL PLASTICS

PROJECTS and PROCEDURES

By Raymond Cherry. This book tells how to work plastics with hand tools, power tools, and how to do internal carving and dyeing. Designs and directions are given for 49 attractive plastic projects including cutting, drilling, punching, tapping, finishing and many other steps necessary for completing different objects. $1.50. Write for approval copy. Clip this.

☐ GENERAL PLASTICS	$1.50
OTHER BOOKS:	
☐ HOME MECHANICS	$1.25
☐ METALWORK TECHNOLOGY AND PRACTICE	4.00
☐ GENERAL SHOP WOODWORKING	1.00
☐ PROJECTS IN WOODWORK	3.50
☐ GENERAL DRAFTING	1.00
☐ PROBLEMS IN DRAFTING AND DESIGN	1.00
☐ DRAWING APTITUDE TEST. Spec. set	.35
☐ SPUR GEARING	1.00
☐ GENERAL SHOP METALWORK	1.00
☐ UNITS IN SHEET METALWORK	.80
☐ UNITS IN BENCH METALWORK	.80
☐ UNITS IN ETCHING, SPINNING, RAISING & TOOLING METAL	.80
☐ UNITS IN PATTERNMAKING & FOUNDING	.80
☐ UNITS IN FORGING AND WELDING	.80
☐ GAS & A.C. ARC WELDING & CUTTING	1.00
☐ MACHINING OF METAL	3.50
☐ MACHINE SHOP PROJECTS	1.00
☐ ENGINE LATHE OPERATIONS	1.60
☐ BLUEPRINT READING, CHECKING & TESTING	2.00
☐ READING AIRCRAFT BLUEPRINTS	2.00
☐ GENERAL SHOP ELECTRICITY	1.00
☐ PROJECTS IN ELECTRICITY	1.00
☐ PRINCIPLES OF ELECTRICITY	1.60
☐ APPLIED FUNDAMENTALS OF MACHINES	2.50
☐ METHODS OF MEASUREMENT	1.00
☐ GENERAL PRINTING	1.60
☐ SUPERVISOR'S JOB IN INDUSTRY	.80
☐ GENERAL BOOKBINDING	1.00
☐ MACHINE WOODWORKING	2.75
☐ GENERAL LEATHERCRAFT	1.50
☐ PRACTICAL SIGNS & POSTER WORK	1.00
☐ LEATHERCRAFT TECHNIQUES & DESIGNS	5.00

and

McKNIGHT PUBLISHING COMPANY

DEPT. 53, MARKET AND CENTER STREETS, BLOOMINGTON, ILLINOIS

Instructional RESOURCES

Books:

Advertising and Editorial Layout. Price. New York: McGraw-Hill Book Co., 1949. Pp. ii+359. $6.00.

Teachers of the graphic arts will find this volume a complete and clear exposition of the principles and practices of design in the layout of editorial and advertising matter in magazines and newspapers. The elements of layout are discussed in great detail with numerous illustrations. Pictures, lettering, typography, and color are covered at some length. Advanced students will find this an excellent sourcebook on layout.

Matlack Price has had wide experience as a magazine editor, art director, and consultant. He teaches advertising design and layout at the Rhode Island School of Design.

General Drafting. Fryklund and Kepler. Bloomington, Ill.: McKnight and McKnight, 1949. Pp. 166. $1.00. Rev.

Two shortcomings of many drafting textbooks are met and overcome in this work. The authors set out to present a book that would give actual instruction in how to perform the fundamentals. They also wanted to get away from the tendency to provide drawings which could be copied. Each drawing in this paperbound book is a problem in itself.

Verne Fryklund is President of the Stout Institute, Menomonie, Wis., and Frank R. Kepler is supervisor emeritus of drafting in the Detroit, Mich., schools.

Planning Your Home Workshop. Brown (Editor). Chicago, Ill.: Popular Mechanics Press, 1949. Pp. 128. $2.50.

There has been a need for a book which would be concerned with the problems of the untold thousands of Americans who have taken to the home workshop. There are plans and suggestions for small, medium, and large shops —both general and specialized.

Sam Brown is a well-known home workshopper and contributor to *Popular Mechanics.*

Aircraft Maintenance and Service. Drake. New York: The Macmillan Co., 1949. Pp. ix+352. $6.00.

Here is the sixth in the Macmillan series on aviation by Col. Drake. Because the airplane requires a number of specialists in order that it be kept in repair, there is information given about a variety of maintenance and servicing operations. It is written in nontechnical language and is well illustrated.

Col. Rollen H. Drake is a research engineer. He formerly was an instructor in the Los Angeles, Calif., public schools in aviation subjects.

Facsimile. Jones. New York: Murray-Hill Books, Inc.; 1949. Pp. xvii+422. $6.00.

Like all the other recent developments in the continuing revolution in communications, facsimile creates a need for skilled servicemen in a specialty. This is a valuable work for technicians and teachers and all those who make use of facsimile equipment.

Charles R. Jones is Coordinating Engineer, Finch Telecommunications, Inc.

Text in Patternmaking. Hanel. Milwaukee, Wis.: The Bruce Publishing Co., 1949. Pp. xii+314. $2.96.

This volume is in two parts: the first is concerned with general information and with related technical data; the second has to do with jobs which aim at providing experiences in fundamental patternmaking procedures.

Alexander V. Hanel is an instructor in patternmaking at Boys' Technical High School, Milwaukee, Wis.

Pamphlets:

Employment Outlook in Electric Light and Power Occupations is Bulletin 944 of the U. S. Department of Labor, Bureau of Labor Statistics. The format of these valuable bulletins is well known to guidance persons. In the case of these two occupational fields, the outlook is for expansion of production and consumption but not a great increase in personnel. Job opportunities for well-trained specialists will be available, however. Write for a copy (cost, 30c) to the Superintendent of Documents, Washington 25, D.C.

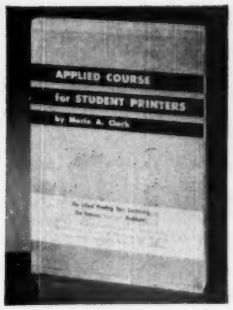
Industrial Arts in the Modern School—Its Function and Organization is a bulletin of the State of Illinois Board for Vocational Education, Springfield. Published in 1948, it is valuable as a source book for planning, administration, organization, and operation of an industrial-arts program.

Manual of Instructional Materials for Apprentice Classes is a publication of the California State Department of Education's Instructional Materials Laboratory of the Bureau of Trade and Industrial Education, Oakland. It contains listings of materials for apprentices in the major trade areas. There are many work- and textbooks listed.

Visuals:

Motion Pictures for School Use is a 24-page catalog released by the School Service Department of the Westinghouse Electric Corporation, Box 1017, 306 Fourth Ave., Pittsburgh 30, Pa. Described are 14 sound-motion pictures. Write for a copy, free to teachers.

The Easier Way is a two-reel, 16 mm, sound motion-picture on motion study which has been produced for the General Motors Employee Relations Staff by the Jam Handy Organization. The film runs for 20 minutes and is available for showing to interested groups. For details write to James Craig, Film Section, General Motors Corp., 9-252 GM Bldg., Detroit 2, Mich.



New Printing Workbook

APPLIED COURSE FOR STUDENT PRINTERS

by Merle A. Clark

● Considers every type of job in composition and presswork—from practice in learning the job case and distribution up to making practical tabular forms. Frequent check points are inserted in the procedure to enable the instructor to follow the pupil's progress through the more difficult operations. Each pupil progresses as an individual. Material has been developed by the author in his own shop during a period of twenty years.

A unique feature is the information sheets which the student folds and trims into complete booklets, each with title page. A practical text, it emphasizes newspaper composition, tickets, advertising, etc. No "busy-work" material. Each activity has a clearly defined purpose. Sufficient material given for 2½ to 3 years course. $2.40

Industrial Arts Woodworking

John L. Feirer

Step-by-step procedures from rough stock to finished project. Instructions for proper use of woodwork machines—circular saw, band saw, drill press, lathe, etc. $2.60

Art of Bricklaying

J. Edgar Ray

Basic apprentice text featuring bond patterns, procedures, etc. Well illustrated. Winter publication. $4.00

CHAS. A. BENNETT CO., Inc.
Formerly The Manual Arts Press
1749 DUROC BUILDING **PEORIA, ILLINOIS**

50th YEAR

McGRAW-HILL

SHOP TRAINING TEXTS FOR TODAY

AUTOMOTIVE MECHANICS—*Crouse.* $3.60
MECHANICAL DRAWING, 5th Edition—*French and Svensen.* $2.80
PROBLEMS IN MECHANICAL DRAWING FOR HIGH SCHOOLS—*Levens and Edstrom.* In press
WORKBOOK IN MECHANICAL DRAWING—*Coover.* $1.48
INTRODUCTORY RADIO: Theory and Servicing—*Hicks.* $3.20
ELEMENTS OF RADIO SERVICING—*Marcus and Levy.* $3.60
PRACTICAL SHOP MATHEMATICS, 3rd Edition—*Wolfe and Phelps.* Vol. I, $2.40, Vol. II. $2.60
ARCHITECTURAL DRAWING FOR THE BUILDING TRADES—*Kenney and McGrail* $3.00
CARPENTRY FOR THE BUILDING TRADES—*Lair.* $2.40
CARPENTRY MATHEMATICS, 2nd Edition—*Wilson and Rogers.* $2.20

Write for Vocational Catalogue

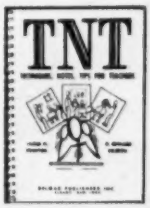
McGRAW-HILL BOOK CO., Inc.
330 West 42nd Street **New York 18, N. Y.**

Here's a MUST for Every Instructor!

TNT

Techniques, Notes and Tips for Teachers
By James O. Proctor, G. Edward Griefzu

A handy, pocket-size reference with a crisp, lively, professionally sound approach. Presents in concise but usable form many of the underlying principles basic to good instruction. Meets the real need for the indoctrination of beginning teachers as well as the refreshing of "old timers."



96 pages, cartoon illustrations $1.25

FOR EVERY SCHOOL SHOP!

SHOP SAFETY EDUCATION

Covers as its primary objective the training in school shops for accident prevention in the home, in industry and on the farm. This book is widely recommended for its practical approach to teaching industrial techniques for accident prevention.

Contents: Accidents and Accident Prevention; Administration of the School Shop Safety Program; Making the School Shop A Safe Place to Work; Guarding Machinery; Maintaining A Safe Place To Work; Personal Protection Devices; Accident Prevention with Problem Students; Hand Tool and Electric Portable Tool Safety; Safe Practices in School Shops; Installing an Effective Accident Prevention Program; Promoting Industrial Safety by Public Agencies.

Plastic bound, 336 pages $2.55
Cloth bound edition $3.30

RELATED SCIENCE for MACHINE TRADES

This monograph is intended as a teachers' reference guide and as a work book for the student. The instructional units were selected from comprehensive trade analyses of the machine trade. The introduction on the meaning of science is followed by a series of instructional units which are grouped according to subject material areas.

Contents: Matter, Liquids and Gases, Forces and Motion, Work, Power and Energy, Heat, Light, Magnetism, Electricity, Chemical Principles, Metal, Non-Metallic Solids, and Shop Fluids.

Plastic bound, 224 pages $2.55
Write Dept. S-35 for Examination copies

DELMAR PUBLISHERS, INC.
Albany 1, New York

News from INDUSTRY

G.E. Motor Construction Kits

A new line of fractional-hp motor construction kits for use as teaching aids in school shops and laboratories has been announced by the Educational Section of General Electric's Apparatus Department. Each kit contains the necessary components, completely machined, for assembling a full-size, regulation motor; including stator and rotor cores, bearings, starting switch, capacitor, shaft, frame, end shields, etc. Wire and varnish are not included in the kit, as these can be inexpensively obtained locally.

The kits are available in four sizes: ¼- and ½-hp single-phase capacitor-start type, and ½-hp three-phase, and a d-c unit suitable for use as a 300-watt generator or ½-hp motor.

Full information may be obtained from the Educational Section of General Electric's Apparatus Division, Schenectady, N. Y.; *or by checking no. 22 on the coupon.*

Lafayette's New Radio and Television Catalog

A new radio and television catalog, so comprehensive in content and clear in presentation that it is a veritable handbook for both the expert and the "ham" is announced by Lafayette Radio, New York City.

The catalog is exceptionally valuable because it is a current encyclopedia of all that's new in electronic merchandise. In keeping with public interest are greatly enlarged sections devoted to high fidelity and to television. One of the unique services performed by the catalog is the assembling of a dozen high-fidelity packages (component parts) which may be installed in cabinets shown in the catalog, or in furniture which may be built in the school woodworking shop. A copy may be obtained by writing to Lafayette Radio, 100 Sixth Avenue, New York 13, N.Y.; *or by checking no. 23 on the coupon.*

South Bend Wall Chart

"Tap Drill Sizes," fourth in the South Bend series of wall charts, is now being distributed. It is 13" x 19", with white lettering on a dark blue field. This chart covers American National screw thread pitches as established by the National Screw Thread Commission. Sizes of threads, threads per inch, outside diameter of screw, tap drill sizes, and decimal equivalent of drill are given for National Coarse Standard Threads (N.C.), formerly U.S.S.; National Fine Standard Threads (N.F.), formerly S.A.E.; and Special Threads (N.S.).

A sample copy will be mailed on request to any vocational school director or instructor, writing on school letterhead to South Bend Lathe Co., 181 East Madison St., South Bend 22, Ind.; *or by checking no. 24 on the coupon.*

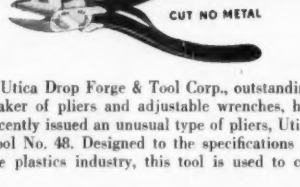
Marvin's New Dividing Head

A new dividing head that provides wide latitude in selecting various divisions to meet specific requirements has been developed and will shortly be marketed.

It is ideal for dividing operations required in gear cutting, layout, splines, fluting taps or reamers, cams, hex screws, and squaring shafts. The unit comes complete with three index plates, each plate having six sets of holes. It will tilt from 5° below horizontal axis to 30° past vertical axis; total, 125°

For further information, write H. B. Hazerodt, Director of Sales, Marvin Machine Products, Inc., 414 Ford Building, Detroit 26, Mich.; *or check no. 25 on the coupon.*

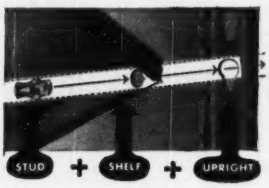
Plastic Cutting Pliers



Utica Drop Forge & Tool Corp., outstanding maker of pliers and adjustable wrenches, has recently issued an unusual type of pliers, Utica Tool No. 48. Designed to the specifications of the plastics industry, this tool is used to cut off gates on thermo-plastic extrusions. The cutters are flat on the back for close cutting and the sections are sharply beveled like a knife blade. This makes for easy cutting of the plastic without fracture. A stop screw prevents overlapping of the thin blades, and this can be adjusted as the pliers are resharpened. The No. 48 pliers comes in a 6" and a 7" size, and a companion piece is available in an end nipper, Utica Tool No. 49.

For complete information on Utica's many fine tools, write to the Utica Drop Forge & Tool Corp., Utica 4, N.Y.; *or check no 26 on the coupon.*

New Type Heavy Duty Shelving



PATENTS PENDING

Production has recently been started on a type of all-steel industrial shelving which the manufacturer calls IRON-GRIP shelving. Specifically engineered for installations requiring extreme ruggedness, this shelving finds application where weight carrying ability is an important consideration. A unique feature is that no nuts or bolts are required. Sections are quickly and easily assembled with studs. A slope in the keyhole joins with the taper on the stud to form the tightest and strongest of grips (see illustration). The angle posts are extremely strong—the 18 gage shelves when fully reinforced have a weight capacity of 2000 lbs.

IRON-GRIP shelving comes in 36" wide sections and is available in 6' to 10' heights by 12" to 24" depths. A recently-published circular giving full details will be sent on request. Write Precision Equipment Co., 3710 Milwaukee Ave., Chicago, Ill; or *check no. 27 on the coupon.*

New Literature

How to Select, Use, and Care for Bits, released by the Irwin Auger Bit Co., as its name implies is crammed with valuable information on the proper selection, use, and care of bits of all types. For a free copy, write to the Irwin Auger Bit Co., Wilmington, Ohio; *or check no. 28 on the coupon.*

Metal-Shop Projects. A new catalog listing castings and parts for projects suitable for teaching metalwork in machine, farm, and general shop at junior- or senior-high and vocational school levels. For free copy, write Casting Specialties, 1925 N.. 49th St., Milwaukee 8, Wis.; *or check no. 29 on the coupon.*

Metal Spinning. An instruction book on metal spinning, will be sent free of charge on request by instructors to Boice-Crane Co., 938 Central Ave., Toledo 6, Ohio, headquarters for spinning tools and accessories for most makes of lathes. Write company directly, mentioning SCHOOL SHOP, *or check no. 30 on the coupon.*

Plastic Models for Teaching, an interesting catalog. For free copy, write Custom Molded Plastics, 253 Park St., Benton Harbor, Mich.; *or check no. 31 on the coupon.*

Each item listed above is numbered. Check the numbers of the items you want, and mail the coupon, properly filled in, to . . .

School Shop
Ann Arbor, Michigan

22	23	24	25	26
27	28	29	30	31

name .....
school .....
school address .....
city, zone & state .....
subject(s) taught .....

1-50

PROTO TOOLS
formerly
PLOMB TOOLS

Big News! **A different name for your old friends**

You will find PROTO tools—formerly Plomb tools—everywhere! Over 10,000 better-class dealers display them . . . Since 1907, high quality, superior design and long life have made them the favorites of professionals . . . Remember, the new name—PROTO tools. Buy them from your dealer today.

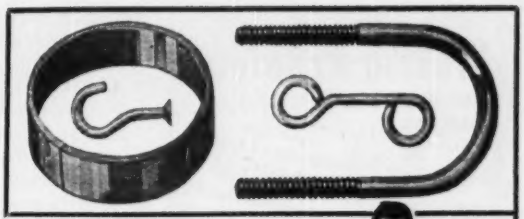
Write for catalog to

PLOMB TOOL COMPANY

2205N Santa Fe Ave., Los Angeles 54, Calif.

PROTO TOOLS LOS ANGELES

4986



Students Learn Production Forming Methods with

DI-ACRO BENDERS

Thousands of DI-ACRO Benders are in regular production use forming a great variety of small parts of manufactured products. Your students can learn to duplicate parts accurate to .001" in tubing, angle, channel, flat, round, or square materials with these precision machines.

DI-ACRO Bender No. 2 forming steel tubing.

Send for Catalog "Die-Less Duplicating" which fully describes and illustrates all models of DI-ACRO Benders, Brakes and Shears, Notchers, Rod Parters, Punches.

DI-ACRO PRECISION MACHINES DIE-LESS DUPLICATING

O'NEIL-IRWIN MFG. CO.

355 — 8th AVE., LAKE CITY, MINN.

FREE ALLIED'S New 196-Page 1950 RADIO CATALOG

Everything in Radio FOR THE SCHOOL

- Radio Training Kits
- Test Instruments
- Radio & Electronic Parts
- Recording Equipment
- Public Address Systems
- Television & Radio Sets

ALLIED is the one *complete, dependable* school supply source for all your radio and electronic needs. Our 196-page Buying Guide offers the world's largest selections of P.A. and Sound equipment, radios and radio-phonos, recorders and supplies, latest TV receivers, classroom training kits, parts, tubes, tools, books, diagrams—all at lowest money-saving prices. All orders are filled *from stock* and shipped speedily to meet your immediate requirements. Send today for your FREE copy of the 1950 ALLIED Catalog—Radio's *complete* Buying Guide.

ALLIED RADIO

833 West Jackson Boulevard
Dept. 9-A-0 Chicago 7, Illinois

Send for FREE Radio Catalog

Individually Tested...

TO INSURE BETTER PERFORMANCE

IMPROVED Spring Clamp
In three convenient sizes

HARGRAVE CLAMPS

"C" Clamps
Openings 1 in. to 14 in.

Hand Screw
All popular sizes

No. 640 IMPROVED "I" Bar Clamp
Openings 2 ft. to 10 ft.

- Hargrave Clamps have been constantly improved with the aid of skilled mechanics to offer greater operating advantages and increased durability. Individually tested, they must be stronger, tougher and flaw-free. Made in openings from ¾ in. to 10 ft., from ½ in. to 16 in. deep.

WRITE FOR CATALOG showing the complete line of Hargrave Individually Tested Clamps, Chisels, Punches, Brace Wrenches, Star Drills, Washer Cutters, File Cleaners, etc.

4059 Montgomery Road
Cincinnati 12, Ohio

THERE IS AN INDUSTRIAL DISTRIBUTOR STOCK NEAR YOU

HARGRAVE Tested Tools
THE CINCINNATI TOOL COMPANY

HOW TO SOLVE YOUR
Plastic Problems
IN ONE MOVE!

CALL ON Plastic Parts & Sales' HUGE STOCK and QUICK SERVICE

PARTIAL LIST OF PLASTICS IN STOCK:
METALLIC COATED ACETATE
SCREW DRIVER HANDLE STOCK
PLEXIGLAS
LUCITE
CELLULOSE ACETATE
CASTOLITE
PLASTIC FOAM (in slabs and sheets)
METAL FINDINGS
PLASTIC JEWELS
HANDBOOKS
DYES—ADHESIVES
BUFFS
FINISHING COMPOUNDS. Injection —Compression Lamination Presses — MANY MORE ITEMS

Over 2000 Items for All Plastic Craft Projects
Here is a partial list of our huge stock of plastics, adhesives, dyes, and other items available for immediate shipment! All sizes and colors of nationally known brands of sheets, rods, tubes, and liquids places at your disposal one of the largest stocks of plastics on the market. Our mid-continent location enables us to conveniently ship to any part of the country, and most orders are forwarded same day received.

WRITE FOR PRICE LIST AND CATALOG!
INSTRUCTORS: Accept FREE our big plastics price list, Jewelry Findings Catalog, Information on Fabrication of Plastics—your buying guides for all plastic craft needs. Write on school letterhead. STUDENTS must send 25c for this literature which amount will be deducted from first order.

PLASTIC PARTS & SALES Dept. S-1610
1157 S. Kingshighway Blvd. St. Louis 10, Mo.

PEWTER
Sheets and Circles
Pewter, the most popular metal, is now available for the first time since the war.
Write for current price list
AMERICAN HANDICRAFTS CO., INC.
45-49 So. Harrison St.
East Orange, New Jersey

FREE CATALOG
Latest Edition—84 pages of craft materials and hand power tools, plastics (sheet and liquid), ceramic supplies, drawing and painting materials, plan sheets, woodworking projects, etc. Complete selection of the latest and best instruction books. Big assortment of kits. Write for free copy today.
JACKSON, Dept. X90
3933 N. 28th St. Milwaukee 10, Wis.

FREE
INSTRUCTION BOOK ON METAL SPINNING
SENT TO ANYONE ON REQUEST
BOICE-CRANE COMPANY
938 Central Avenue Toledo 6, Ohio
Headquarters for spinning lathes; spinning tools and accessories for most makes of lathes.

COATS PROFESSIONAL MODEL SAVES CLOTHES.
Designed after years of contacts with teachers everywhere.
A special coat made expressly for YOU. Not sold in stores. Sanforized . . . sizes 36 to 46. Colors . . . tan, white, frock grey, or grey green.
SATISFACTION GUARANTEED
5.75 2 COATS for POSTPAID $11.50
Direct from our factory
The School Apron Folks
CANVAS PRODUCTS CORP. P. O. BOX 1 POND DU LAC WIS.

Washington . . . *from page 28*

says, "require skill and inventiveness of the highest order."

As he sees it, those youngsters who will probably not attend college should receive in the lower grades some skills in personal development and understanding of the world about them. Vocational training should be reserved to the secondary school, for the time when the student has gained some maturity and is able to decide upon his lifework.

But the proper selection of a vocation, he believes, should never outweigh the need of the person to become a whole citizen. The tools of intelligent life-planning for those who do not attend college should be of broad intellectual scope. In Dr Jones' words, "We must avoid implanting automatic skills without basic understanding."

Dr. Jones holds that vocational training is vital in the modern world because unskilled work can best be performed by machines. Machines, however, require complex mechanical and mental skills to produce, operate, and maintain them. Equipping workers with this know-how, says Dr. Jones, is the main job of instruction for the skilled occupations today.

Poverty and Lack of Training.—Men and women in Congress have been studying why people are poor. They found the answer—lack of vocational training.

Nearly 10,000,000 families in the United States—one-fourth of the total—earn less than $2000 a year. These could have their incomes raised through more or better trade training, the Congressional committee said. This is especially true in the cities, where unskilled laborers and operatives make up the hard core of the low-income group.

The Congressional study showed not only that low education breeds low income, but that schooling opportunities are denied those in low-income brackets. Thus, the vicious circle goes round and round. Sixty-two percent of heads of families earning less than $2000 received only an eighth-grade education. Thirty-two percent had had a taste of some high school; while only slightly over 6 percent had had one year or more of college. These families, victims of low education, will also victimize their children because they cannot afford to send them on to school for a sound training.

Concludes the committee: "Broadening educational opportunities, both academic and vocational, for all qualified students, regardless of economic status, is a most promising long-range attack on the low-income problem."

Citation to Diamond

Tom Diamond

THOMAS DIAMOND, retiring head of the department of vocational education at the University of Michigan, was awarded the Distinguished Service Citation by the Ship at the American Vocational Association convention in Atlantic City on December 9.

The presentation was made by Richard H. Simpson and read in part, "Distinguished Service Citation in tribute to Thomas Diamond, Michigan's adopted son, native of Scotland; champion, servant, and leader of industrial education—for his many contributions in his chosen field—and for his scholarly vision, kindly humor, and, above all, his tireless devotion to education in a free land."

The tribute was printed on parchment and bound in a leather folder. An engraved wristwatch commemorating the event was also presented to Mr. Diamond. He is retiring next month after 30 years of service on the University faculty. His successor after July 1 will be Ralph C. Wenrich, present state director of vocational education for Michigan.

Professor Diamond, who is a consulting editor for SCHOOL SHOP, will take on added editorial responsibilities for the magazine on his retirement from

ELECTRIC KILNS
LONG LIFE RIBBON TYPE HEATING ELEMENTS
2000 F° to 2200 F°—Quick Delivery
Large & Small—Bench & Floor Models
JAMES W. WELDON
Laboratory
2315 Harrison St. Kansas City 8, Mo.

METALS — Aluminum & Copper
Aluminum Circles, Ovals, and Rectangular Sheets—Gauges #14 to #18. Standard or cut-to-order.
Copper Circles, Ovals, and Rectangular Sheets.—Gauges #18 and #20. Standard or cut-to-order.
Bracelet Blanks—Aluminum, Copper, and Two-Tone—copper with a heavy nickel plate.
Metalcraft Tool Kits.
All specifications and prices given in Catalog No. 49C.
For your copy, write, mentioning School Shop, to:
CRAFTSMAN SUPPLY HOUSE, Scottsville, New York

LEATHER & CRAFT SUPPLIES
NEW . . . illustrated 84 page catalog.. Thousands of items for the Leathercraft teacher and student..Leather supplies.. Tools . . Books . . Patterns . . Designs . . Art projects • Send 10¢ today to cover handling charges.
RUSSO HANDICRAFT SUPPLIES
Dept. SS-1, 245 S. Spring St., Los Angeles 14, Calif.

TEACH SHAPING SAFELY
ON YOUR DRILL PRESS
QUICK-KRAFT SHAPER KIT
Guard, 5 Cutters, ½" Shaft & Diagrams
12,000 users first year. Send name & address of your power tool Dealer with your name & School; or send $3.95 (full price) direct to:
L. F. WALNER, S-1, 921 E. Cedar Ave.
BURBANK, CALIFORNIA

PLASTICS

NEW PRICE LIST OF

LUCITE — CATALIN — PLEXIGLAS
JEWELRY FINDINGS

SENT ON REQUEST

PLASTIC CRAFT WORKSHOP
P. O. BOX 127 - - - RAHWAY, N. J.

LEARN
LEATHER CARVING
Professionally!

The age-old secrets of leather carving are now available in a home-study course by F. O. Baird, of whom Canadian Hobby Craft magazine says, "known internationally as 'THE leather carving artist.'" The course is used by state veterans' rehabilitation depts., occupational therapists, craft teachers, etc., as well as professional carvers.

NO ARTISTIC ABILITY NEEDED
The Baird Course shows you how to develop designs, gives you dozens of beautiful patterns. Step-by-step instruction, short-cuts, how to select leather, etc.
Mr. Baird personally supervises every lesson, helps you learn fast.

Get complete information—write TODAY to Dept. L-1

BAIRD School of Leather Carving
Manitou Springs, Colorado

LAMP PARTS

SPEEDY 24 HOUR SERVICE on Lamp parts from one of the most complete stocks in the country.

SHOP TEACHERS: Send 10c for 1950 56-page catalog showing every part necessary to build lamps.

GYRO LAMP AND SHADE CORP.
54828 N. Clark St., Chicago 40, Ill.

Plastics
and Supplies

Schools in every state of the Nation use us as their principal source of supply.

We are a leader in the Plastics field. Write for *free* list of plastics, materials, and supplies. Our prices are lower.

PLASTIC SUPPLY COMPANY
2901 N. Grand Blvd. St. Louis 7, Mo.

Hobbywoods

WOODWORKERS, MODEL MAKERS

We serve thousands of homecraftsmen and hobbyists throughout the country with a fine selection of rare imported and domestic woods. Veneers, turning blocks, cabinet hardware. Quick delivery. Mail coupon below.

CATALOG OFFER: (U.S.A.)

HOBBYWOODS,
Dept. S, 1305 Eastern Ave.
Baltimore 3, Md.

Send me complete Hobbywoods Catalog with periodic supplements plus a twenty-five cent size Waterproof Veriply (urea resin) Glue. Enclosed is 25c for both, prepaid. ss

Name .....

Address .....

Town ..... Zone ..... State .....

teaching as chairman of the Editorial Advisory Board. In his new position he will act as consultant on editorial policy and work more closely with the editors in the selection and editing of articles to be published.

AVA . . . . . *from page 9*

is now 30,716, the highest figure in the history of the organization. He also advocated strong action against activities inimical to vocational education.

Congress was urged by the delegates and also by the National Association of State Directors of Vocational Education to provide during the next fiscal year the full amount of the approximately $29,000,000 authorized for vocational education under the George-Barden Act. Last year $19,000,000 was appropriated.

The National Advisory Council for Vocational Education, a new group of state directors of vocational education instituted by U. S. Commissioner of Education Earl J. McGrath (see page 28 of this issue of SCHOOL SHOP), reported that it had met with the Commissioner and with an assistant to President Truman to discuss this matter and that "much progress" had been made.

The convention resolution on the subject pointed out that the demand for vocational education has increased tremendously since the war to the point where "the percentage of reimbursement to local school districts has been reduced in most states below the level of effective operations."

In other resolutions the AVA delegates took the following action:

Urged that members utilize opportunities for working with school and community groups interested in all fields of education in order to aid in planning a better total program of education.

Recommended that the AVA stimulate and make desirable membership on the part of industrial-arts teachers and leaders in the organization; promote the appointment of state supervisors of industrial arts; and sponsor publications and research in industrial arts.

Criticized the Veterans Administration handling of the on-the-farm-training program.

Asked for revaluation of the procedures in meeting the objectives of life-adjustment education.

Endorsed the plan of U. S. Commissioner of Education Earl J. McGrath in setting up the National Advisory Council for Vocational Education.

Urged extension of AVA services through the employment of additional personnel, professionally trained for the purpose.

School Shop Projects

Castings and Parts
for
DRILL PRESS

Ship Wt. 70 lbs.

7 x 9" table drills to center of 12" circle
24" column bronze quill
Can be built using only a 13" lathe & large drill press
Basic extra $8.50
Drawings & instructions included.

Only $19.87 for Complete Parts
F.O.B., Milw., Wis.

Send for Your Catalog TODAY!

CASTING SPECIALTIES
1925 N. 49th St., Milwaukee 8, Wis.

HUNDREDS OF ITEMS AND IDEAS FOR THE WOODWORKER

A Board or a Carload
TOP GRADE - KILN DRIED
HARD TO FIND LUMBER

MAHOGANY—WALNUT—WH. HD. MAPLE—CHERRY—POPLAR AROMATIC RED CEDAR—RED, WHITE AND ENGLISH BROWN OAK—SAPELI—ANDIROBA—BALSA WOOD

BIG NEW NO. 17 CATALOG FOR WOODWORKERS. 144 PAGES OF HARD-TO-FIND SUPPLY ITEMS.

The finest catalog we ever published. Full of unequaled bargains and useful information.

Greatest Selection of Fine Domestic and Imported Woods. Catalog shows in natural color 32 rare and fancy woods, 43 matched veneer designs, multi-colored bandings, inlays, overlays; 275 scroll patterns to choose from, labor-saving machinery and a section for beginner's instruction.

OVER 100 NEW ITEMS

My stocks are gigantic—bigger than ever before. Really FAST SERVICE on your orders. My new catalog includes a "gold mine" of hard-to-find hardware items. Whatever Wood Craftsmen need—I HAVE IT.

NEW LOW PRICES
MAIL COUPON TODAY for GIANT NEW CATALOG 17

Fifteen cents to students. FREE to instructors.
Harold F. Hunt, Pres.,
CRAFTSMAN WOOD SERVICE CO.
2729 S. Mary St., Dept. K-1
Chicago 8, Ill.

Please send me your big new Catalog No. 17.

NAME .....

ADDRESS .....

TOWN ..... ZONE ..... STATE .....

FROM WASHINGTON

BY MICHAEL PACA

State Directors Advise McGrath.—Nine men came to Washington on December 2 to talk with U. S. Commissioner of Education Earl J. McGrath about vocational education. All were directors of vocational education in their states. Let us set down their names first, since this group promises to be important in the day-to-day operations of vocational education during the years ahead. Their names, then, and the states from which they come, are: J. Marion Adams, Arkansas; E. C. Comstock, Colorado; C. M. Miller, Kansas; M. N. Stratton, Massachusetts; Ralph C. Wenrich, Michigan; John A. McCarthy, New Jersey; Verd Peterson, South Carolina; and Harry G. Halstead, Washington. Accompanying them was a ninth person, J. B. Perky, Oklahoma director of vocational education, who is also president of the National Association of State Directors of Vocational Education. For the time being, at least, Mr. Perky will act as observer and catalytic agent among the eight.

The eight were chosen through a long process of nomination by the state directors in several parts of the country. This fact is recorded here to show that the group was not hand-picked from Washington. The group itself had chosen the name of Working Advisory Council.

At their first meeting in Washington only one fact was clear. They are to stay out of policy matters, since this is the province of the three-year-old Policy Advisory Committee on vocational education. The new council's area is to be operations, and if this is a vague word at this time, it is because the new council has not yet had a chance to list, item by item, the things which will occupy their attention.

Their job in its main outlines is clear, however. It is to look at the ways the federal Vocational Division works with the states and the ways in which the states work with local vocational schools and to advocate changed practices where change is necessary, to plug for improvement where improvement is needed.

The group will also have a voice in suggesting changes in vocational education emphasis and may well indicate the priority in which certain projects should be undertaken. For example, it is quite possible that it may recommend an all-out emphasis on work experience; it may suggest that trade and industrial education should give more thought to the extension type of class as against the all-day type.

The council's first sessions on December 2 and 3 were exploratory. The men were trying to decide what issues they are to take up in the future and what they are to leave alone. Thus, they talked about the reporting system of local schools to the states and of the states to Washington; they asked whether they should look into the suggestions which have been made to modify the George-Barden Act; they wondered if the burden on operating people would be lifted if funds were not specifically allocated for the four programs (that is, home economics, vocational agriculture, distributive occupations, and trade and industry) but merely assigned to vocational education generally.

Because Congress may take up a bill in January authorizing funds for practical-nursing education, the men asked many questions about this proposed legislation.

After the meetings, one Office of Education official said: "The Working Advisory Council looks very hopeful as a piece of machinery which will help Washington to become more sensitive to state and local needs." And so a beginning has been made for lifting whatever barriers of communication have existed between vocational education in the states and communities and Washington.

Galen Jones on Industrial Education.—Personnel shifts at the U. S. Office of Education have brought to the fore Dr. Galen Jones, a man whom school shop teachers should know better. On December 1, he became head of the newly-created Division of Elementary and Secondary Schools. This set-up resulted from the pooling of two separate divisions for elementary and high schools. In his new post, Dr. Jones will now supervise Arne Randall, specialist in fine arts for elementary schools, and will, of course, continue to oversee John Ludington's work in industrial arts. Dr. Jones will continue his work as chief of the steering committee for the Commission on Life-Adjustment Education. All this means even closer cooperation between the Office's staff in general education with that in vocational and industrial education.

Dr. Jones, who first joined the Office of Education in 1945, has some vigorous notions on the needs of youth. He believes that "schools must provide both general and vocational education" in order to achieve the proper balance in training high-school youth for their roles as both citizens and workers. "Work and culture are inseparable," he says.

He believes we should do away with the false barrier, inherited from ancient times, between trades and professions, mind and matter, mental and manual. "The skilled occupations today," he

(*Continued on page* 26)

INDEX TO ADVERTISERS

Allied Radio Corp. 25
Ambroid Co. 20
American Handicrafts Co. 26
American Technical Society 2
American Type Founders 10
Atlas Press Co. 3
Baird School of Leather Carving 27
Charles A. Bennett Co., Inc. 23
Boice-Crane Co. 11, 26
Brodhead-Garrett Co. cover 2
Canvas Products Corp. 18, 26
Casting Specialties 27
Cincinnati Tool Co. 25
Craftsman Supply House 26
Craftsman Wood Service Co. 27
Custom Molded Plastics 19
Delmar Publishers, Inc. 23
Empire Tackle Co. 4
Erwood Manufacturing Co. 20
Charles F. Fischer & Co., Inc. 20
Foredom Electric Co. 21
Gearon Co. 21
Gyro Lamp & Shade Corp. 27
Hobbywoods 27
International Textbook Co. 20
Jackson Studio 26
McGraw-Hill Book Co., Inc. 23
McKnight and McKnight 22
Oliver Machinery Co. 3
O'Neil-Irwin Mfg. Co. 25
Parks Woodworking Machine Co. 3
Plastic Craft Workshop 27
Plastic Parts and Sales 26
Plastic Supply Co. 27
Plomb Tool Co. 25
Power Tool Div., Rockwell Mfg. Co. 14, 15
Proto Tools 25
Russo Handicraft Supplies 26
Howard W. Sams & Co., Inc. 18
Sheldon Machine Co., Inc. 12
South Bend Lathe Works cover 4
Stanley Electric Tools cover 3
Stanley Tools 17
The L. S. Starrett Co. 17
J. D. Wallace & Co. 17
Lloyd F. Walner 26
James W. Weldon Lab. 26
Weller Manufacturing Co. 13
Weston Electrical Instrument Co. cover 3

WESTON
High-Frequency Analyzer

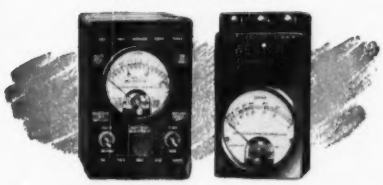
MODEL 769

Provides:

1. A stable, probe type, Vacuum Tube Voltmeter.
2. A high impedance electronic Volt-Ohmmeter using 115 volt, 60 cycle power.
3. A conventional Volt-Ohm-Milliammeter with self-contained power source.

Ideal for practically all electronic measurements up to 300 megacycles. Especially designed for AM, FM, and Television requirements. Completely independent of line voltage variations between 105 and 130 volts. Full details in bulletin R-31-B.

COMPACT TEST EQUIPMENT FOR CLASSROOM USE



Volt-Ohm-Milliammeter (Model 697)—Contains carefully selected group of ranges to cover a wide variety of electrical measurements. Compact, light weight, and low in cost.

Ohmmeters (Model 689)—Available in two, double range instruments . . . 0-10 and 0-1000 ohms full scale; and 0-5000 and 50,000 ohms full scale. Compact, rugged and low in cost.

WESTON *Instruments*

Write for Bulletin No. E5A describing the full line of WESTON Test Equipment . . . Weston Electrical Instrument Corp., 670 Frelinghuysen Avenue, Newark 5, N. J.

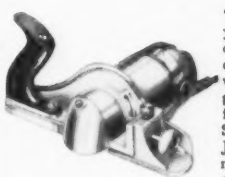
3 basic power tools that earn their budget-keep

These three tools belong at the top of your requisitions list. They're everyday, every-project tools and the most tool for the money. Write today for complete specifications, price, etc. Stanley Electric Tools, Educational Dept., 482 Myrtle St., New Britain, Conn.

Stanley No. 24A. ¼" Electric Drill.

Easy to handle, scaled down in weight and size for easy handling but not in quality of materials and workmanship. Widely used by aircraft and automotive shops. Surplus power for continuous drilling at full load in wood, metal and composition . . . ¼" in steel, ⅜" in wood. Jacobs 3-jaw chuck, aluminum alloy die cast housing, oil impregnated bronze bearings, helical gears, trigger switch with locking device, 3-wire rubber-covered cable. Drill stand available for making economical drill press.

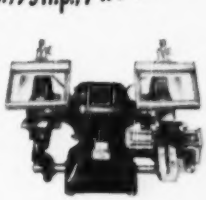
Stanley-Carter J3 Power Plane, ½ h.p.



This will be one of the busiest tools in your shop. Really two power tools in one. First, as a power plane, the spiral cutter at 18,000 r.p.m. leaves a smooth, waveless surface with or against the grain. Depth of cut set by adjustable front shoe. Then, by substituting Carter Shaper Cutters for the spiral cutter, the J3 becomes a versatile small planing mill. Makes surface beads, tongue and groove, rabbet, plow, chamfer, rounding over and other moulding cuts.

Stanley No. 677 Edge Tool Grinder, ⅓ h.p., 7" x 1" wheels

Operates at correct slow speed for edge tool grinding. Equipped with specially built wheels . . . one for edge tool grinding, the other, for general purpose grinding. "Flud-Lite" Eye Shields, adjustable to operator's position. Patented attachment for grinding plane irons up to 2-⅜" and any size chisels.

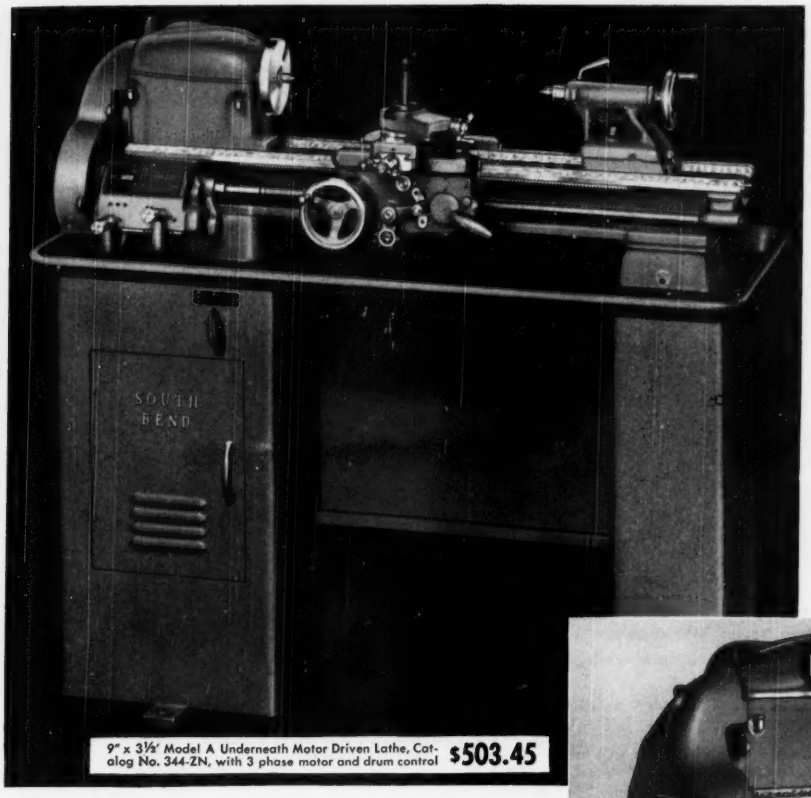


STANLEY

Reg. U.S. Pat. Off.

HARDWARE • HAND TOOLS • ELECTRIC TOOLS • STEEL STRAPPING

The Ideal Lathe *for School Shops*



9" x 3½' Model A Underneath Motor Driven Lathe, Catalog No. 344-ZN, with 3 phase motor and drum control **$503.45**

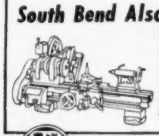
This 9-inch swing South Bend Precision Lathe is small enough for the Junior High School boy to handle with ease, yet it has ample capacity for most shop projects. Ruggedly constructed for industrial service, it will withstand the abuse of student operation. Neat and compact in design, it presents an excellent appearance in the shop, and is economical of floor space and power. A built-in chip pan catches shavings and prevents the shop floor from becoming littered.

All gears, belts, and pulleys are fully enclosed. The motor and driving mechanism are built into the cabinet base under the headstock. Neither the end gear guard nor the cone pulley cover can be opened until driving power is disconnected. This, and other safety features, make the lathe almost foolproof. See illustration at right.

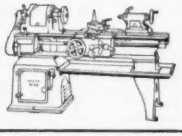
The price of this fine lathe complete with three-phase motor and drum control switch is only $503.45, f.o.b. South Bend. This low price enables you to provide more lathes — train more students on a limited budget.

B
A
C
This position of lever unlocks gear cover (A), headstock cover (B), and disengages motor drive (C) even if electric power is left on. Access is possible to gears (at A) or headstock belt drive (at B) only when these parts are not moving.
With lever in this position, the gear cover (A), and headstock cover (B) are locked in their closed positions, and the motor drive (C) is engaged.

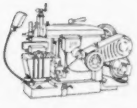
South Bend Also Makes:



Bench Lathes With 9" and 10" swings, 3' to 4-1/2' bed lengths, in 27 models.



Floor Lathes With 10" to 16/24" swings. Quick Change Gear and Toolroom models.



7" Bench Shaper 0 to 7" stroke, cutting speeds 3' to 114' per min. Six power cross-feeds.

14" Drill Presses Drill capacity 1/2" in steel. Floating spindle. Bench and floor models.

SOUTH BEND LATHE WORKS

BUILDING BETTER TOOLS SINCE 1906 • 470 EAST MADISON STREET, SOUTH BEND 22, INDIANA